

International
Alligator
Crocodile
Trade
Study



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INTERNATIONAL ALLIGATOR AND CROCODILE TRADE STUDY

A collection of papers on the international trade in crocodilian skins
compiled under contract by the
Wildlife Trade Monitoring Unit of IUCN's Conservation Monitoring Centre
and TRAFFIC(Japan)

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FOREWORD

I hastily wrote a foreword to the IACTS Study in December 1986 in an attempt to publish the present report prior to the sixth meeting of the Conference of the Parties to CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) in 1987. For several reasons, the final report has been delayed until now, and the view from my desk today as these words are penned is somewhat different from the mid-air urgency I felt en route to Africa that winter day more than a year ago. Much is the same, however, and I believe the words I wrote then express the meaning and purpose of the IACTS Project as well as any that could be more carefully chosen today.

"It is fitting I suppose that this must be written in mid-air somewhere over the Atlantic headed again for Africa. First landfall will be Dakar, then Monrovia, Lagos and finally Nairobi. Kenya will make the 24th country visited in 24 months on behalf of the IACTS project.

"From there, if talks go well and everything looks right, I will go on to Khartoum to plan the first phase of the Sudan Expedition. Maybe it will happen in early 1987. Maybe it won't happen in our lifetime, but someday it will happen. The crocodiles of the Sudd will be better managed and protected. Conservation through utilization will be better understood. The value of renewable natural resources as national treasures will be more widely appreciated. Not only in Sudan, and not just crocodiles, but with all wildlife in all the wild places they live around the world.

"It is the purpose of the IACTS project to help achieve these things by collecting historical trade information and putting it into the hands of scientists. Given the research data, the technical experts can then better advise governments of the best available options to manage their crocodilians sustainably.

"The IACTS project is aimed at collecting historical trade data, including, wherever possible, sizes of skins as well as numbers. We want to know how they are harvested, when and by whom. IACTS seeks to produce useful and practical information as well as factual data. All are threads to an extremely complex web linking crocodilian protection to research, research to management, management to utilization and responsible utilisation to conservation.

"A most encouraging and useful aspect of the IACTS project, considering the frequent past confrontations between those who seek only to protect crocodilians and those who seek only to harvest and use them, is the co-operative spirit of trade, government and conservation organisations working together. This has required a certain level of understanding - that may in time lead to trust - which reflects a new confidence that scientific facts will eventually determine the best balance between total protection and unregulated exploitation. IACTS is systematically searching for the credible answers to these difficult questions.

"While many people have had a hand in originating this study and in keeping it going, a few deserve very special thanks: Ted Joanen, whose foresight and technical skills helped originate the study; Jonathan Barzdo, whose persistent hand and counsel has kept all phases of the project on course; U.S. Senator John Breaux, who intuitively recognized the value of the study, not only to his own State of Louisiana, but to every country that has crocodilians and seeks to conserve its natural resources; to many, many people in the trade, who for now would perhaps just as soon not be mentioned individually, but without whom this effort

would have been absolutely impossible and which can only move forward with their continued help; and last, but certainly not least, my wife Pamela who has worked as hard as anyone and endured the trials of an absentee husband and father the last two years.

"And there is much to do from here. This report is the start, not the ending. The Okavango, Congo, Irian Jaya, Central and South America, and more await. All need better answers from successful programmes elsewhere as well as early warnings from failures. For if the conservation of crocodilians is going to include their utilisation anywhere, then good management must eventually work everywhere. Anything less is not acceptable to conservation. Half steps simply will not do.

"Our very next step, perhaps the biggest single stride of faith so far, is in Sudan. I leave for Khartoum tonight. The IACTS Project is again, on the move.

J. Don Ashley
December 12, 1986"

And the IACTS Project is still on the move in 1988 as these final words are added from London. Later this year we plan to visit Australia, Papua New Guinea and Indonesia again to update our information on the status of their crocodile ranching and management programmes. A return trip to Africa is also planned, and while domestic problems in Sudan continue to delay the crocodile work that needs to be done there, the substantial progress made by SADCC (Southern African Development Co-ordinating Council) countries with their crocodile programmes merits continued monitoring and encouragement.

In fact, the IACTS Project will continue to monitor world trade in classic crocodilians over the next two years and encourage continued co-operation of industry, government and conservation organisations in obtaining historical trade data. In 1990, we plan to update the World Trade Report section on classic crocodilian trade and report on the progress of existing as well as developing crocodilian programmes under CITES ranching and quota proposals.

Finally, the IACTS Project will continue to emphasise the necessity of diverting trade to legal sources of classic skins - all of which should be tagged and accompanied by appropriate CITES export documents. The consumptive use of any renewable natural resource also carries with it the responsibility to ensure the trade is legal and the resource itself is well protected and managed. We are not yet where we need to be with all crocodilians, but we are still moving - and most certainly at a steady pace in the right direction.

J Don Ashley
May 1988

INTRODUCTION

by

J. Don Ashley

For the past two years the IACTS Project has organised a co-operative effort between trade, government and conservation organisations to document historical trade in classic crocodilian skins. The goal of the Project is: "To obtain a better understanding of international classic crocodilian skin trade and evaluate its effects on the management and conservation of crocodilian resources."

The IACTS Project was developed because of the significant long-term investments by both the public and private sectors in developing wild harvest, ranching and farming programmes, and to investigate the "stimulation of trade" argument (that exporting even legal skins into world trade only stimulates more illegal traffic to satisfy demand). Estimates of world trade in crocodilian skins have ranged from 300 000 to 2 million skins a year and rarely has a distinction been made between classic and caiman skins. In addition, little effort was made before 1984 to evaluate the relationship between the emerging legal trade and the illegal markets, or the impact of one on the other.

Therefore the following objectives for the initial study were adopted by the sponsoring wildlife agencies in Louisiana, Florida, Texas and the U.S. Fish and Wildlife Service in co-ordination with the Wildlife Trade Monitoring Unit of IUCN's Conservation Monitoring Centre and offices of the TRAFFIC Network:

- 1) determine the sources and volumes of classic skins from 1977 to the present;
- 2) delineate transaction patterns and identify inadequate reporting based on the requirements of CITES and other regulatory agencies;
- 3) provide insight into how the trade in legal skins may, or may not, affect illegal trade; and
- 4) develop recommendations to appropriate government agencies and CITES.

In pursuit of these objectives the IACTS Project has succeeded in obtaining significant, previously unpublished, historical trade information to improve our understanding and to provide a better basis for evaluating crocodilian management and conservation efforts worldwide. Based on more than a hundred interviews with representatives from the trade, government agencies and conservation organisations in more than a dozen countries, as well as data-gathering projects by the Wildlife Trade Monitoring Unit and the TRAFFIC Network, we were able to estimate past and present classic skin trade more precisely.

The present IACTS Report is divided into three parts:

- 1) world trade statistics from 1977 to present based on CITES and Customs reports;
- 2) Sudan as an example of an exporting country based on dealers' data; and
- 3) Japan as an example of an importing country also based on dealers' data.

While this is obviously a limited amount of information compared to the complexity of total world trade from all regions, the IACTS Project has been able to reach some initial conclusions:

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- a) Based on preliminary analysis of IACTS data and interviews with dealers, international trade in classic crocodilian skins has decreased substantially in the last 15 years.
- b) Dealers generally agree that total trade is now about 150 000 classic skins a year.
- c) This amount is less than half the estimated annual trade, of 300 000 classic skins a year, in the early 1970s and less than a third of the peak trade in the 1950s and 1960s, which may have reached 500 000 skins a year.
- d) A combination of over-exploitation, habitat destruction, trade treaty restrictions and consumer advocacy are factors contributing to the decline.
- e) Government-managed wild harvests, ranching and farming operations in Papua New Guinea, United States of America, Australia and Zimbabwe, as well as quota harvests in nine African countries and Indonesia can account for approximately 80 000 legal classic skins a year.
- f) Based on these estimates, at least 40% of the classic skin trade is still unregulated, but the trend is definitely toward better management and regulated trade.
- g) The collection of historical trade data from dealers, particularly if it includes size classes of skins, can provide useful data, and in the absence of other comprehensive population monitoring programmes, may be a very economical and practical gauge of a species status.

Based on these preliminary findings the IACTS Project has recommended:

- 1) All crocodilian skins should be tagged.
- 2) An international Crocodilian Unit (perhaps similar to the CITES Ivory Unit) should be established to monitor trade in skins on a regular basis and ensuring standardised methods of data collection.
- 3) A dedicated funding base for international trade and population monitoring efforts should be established.
- 4) The annual reports of Parties to CITES should include sizes as well as numbers of skins exported from range states under a quota system, in accordance with a proposed recommendation approved by the CITES Technical Committee.
- 5) Enforcement efforts to reduce illegal trade in crocodilian skins should be increased, particularly in importing countries where they will be more effective.
- 6) CITES export quotas for crocodiles should not be increased and new quota proposals for caimans should not be established unless efforts are made to collect historical trade data, long-term population monitoring programmes are initiated and more effective enforcement programmes are implemented.

The usefulness of historical trade data to range states that are currently developing management plans for their crocodiles is readily apparent. The Sudan Study, in which primary dealers collaborated to provide historical data on both numbers and sizes of skins, underscored the conservative nature of that country's initial export quota. And while other problems in Sudan may for the time being make it difficult to implement fully a population monitoring programme, or improve enforcement, the trade study has

provided a basis for conservative export quotas that allows the country to utilise its natural resources better and provides a definite incentive to improve further its crocodile management plan.

Another positive example is offered by Malawi where the Wildlife Department has completed a survey, among hunters and resident buyers, on the skin trade there for the past ten years. This historical information provides invaluable data on which to base estimates of sustainable future harvests and size composition of the skins. If similar information could be provided to Zambia, for example, which has been diligently collecting size data on its skin exports under the quota system since 1985, then the database for justifying the present or increasing harvest levels or ranching proposals is much enhanced.

Since further quota proposals in Africa will include other species besides the Nile Crocodile, there will be an increasing concern over regional impacts trade will have on these species. The Congo for example has obtained export quotas for the Dwarf Crocodile (*Osteolaemus tetraspis*) and the African Slender-snouted Crocodile (*C. cataphractus*). While it might not be possible or practicable to collect all the historical trade data on these species from central and western Africa, a regional effort aimed at gathering as much information as possible from primary harvest areas like Congo, Zaire and Central African Republic, would be helpful in developing management plans for future harvest strategies. Certainly knowing the relative percentage each species represented in historical harvests would be extremely valuable to countries like the Congo seeking now to harvest all three crocodile species.

Similarly, countries that were unsuccessful in their 1987 attempt to increase their CITES export quotas, such as Madagascar, could substantially strengthen future requests by incorporating historical trade data (including skin sizes) into their proposals. While a good start toward this goal for Indonesia is provided by the historical trade data supplied in the report on Japan in the present volume, a much more comprehensive view would be given if Singapore would co-operatively provide the same.

What would be very helpful now for the future management of crocodilian harvests would be the direct support and assistance from European and Singaporean trade groups in collecting past and present trade data. Certainly the invaluable assistance of the All Japan Reptile Dealers Association and other European tanners to this IACTS Project has provided the most comprehensive study to date of the world trade in classic crocodilian skins. Similar co-operation by other trade groups and tanners in the future will be necessary if we are to improve further our understanding of the management and trade implications of harvesting and marketing classic skins. It should be emphasised that historical trade data gathered by the IACTS Project can be provided directly to the range states, or IACTS can support the request of individual range states to trade groups like the French Federation of Reptile Tanners, the International Reptile Products Association and other groups to provide the historical trade data directly to the country of origin. In either case the purpose of providing more comprehensive data on which to base management plans or future harvest strategies is served.

As supplies of classic skins to the market increase during the next few years as a result of more successful management, ranching and farming operations, it will be important to both producers and tanners to be able to project annual classic skin production accurately. In fact, three- to five-year future harvest level projections will prove valuable to the trade and enable producers, tanners and manufacturers to plan their marketing strategies better.

Introduction

In conclusion, the IACTS Project has demonstrated that previously unavailable trade data can be obtained by a co-operative effort involving industry, government and conservation organisations. It is the intention of the project to provide this information to technical experts who are developing management plans for crocodilians so they can better advise their governments of the best available options to manage and sustain their crocodilians.



World Trade in Classic Crocodilian Skins Since 1977

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INTRODUCTION

This report was produced by the Wildlife Trade Monitoring Unit of IUCN's Conservation Monitoring Centre under contract to the International Alligator/Crocodile Trade Study (IACTS). The objective was to review and analyze the existing CITES and Customs data pertaining to the world trade in classic crocodilian skins since 1977. It was also intended that the report should identify areas where the data are incomplete, missing or inaccurate.

We have used Fuchs' (1975) definition of 'classic' skins, to indicate skins that are 'non-ossified' (see also King and Brazaitis, 1971). Amongst crocodilians, these are derived from Alligator mississippiensis, Crocodylus spp., Gavialis gangeticus and Tomistoma schlegelii.

The methods of analysis of the data are described in the appropriate sections. It should be appreciated from the outset that the data sources are of limited value; the limitations are referred to in the text. However, it should also be recognised that CITES and Customs data are the best comprehensive statistical sources available.

The report is presented in three parts: a summary and review of the Customs data; a summary and review of the CITES data; and a region-oriented discussion of the results.

CUSTOMS STATISTICS

Methods

The foreign trade statistics for all countries known or suspected to import and/or export classic crocodilian skins were obtained from the Statistics and Market Intelligence Library of the UK Department of Trade. Data were examined for the years 1977-1984 (where available).

Customs data do not indicate the species involved. Therefore, in analyzing the data the only indication of the species concerned is the country of origin of the skins. The bulk of skins coming from South America are known to be of Caiman spp. For this reason, the South American data are for the most part particularly difficult to interpret, even where any useful interpretation is possible, and they were not collected for this exercise.

Crocodilian skins may be classified under Customs Commodity codes which indicate whether the skins in question are raw or tanned. Some countries, such as Singapore and Thailand, distinguish the condition of the skins further, specifying, for instance, whether leather has been "tawed, dyed or designed" (Thailand Trade Stats.). In such cases where there is a specific category for crocodilian skins, the analysis of the Customs figures is relatively straightforward and the data can be interpreted to present an overall picture of the commercial trends of that country's crocodilian skin trade.

Unfortunately, the commodity categories of most countries' published trade statistics are not sufficiently specific to allow the analysis of their crocodilian skin trade. Many countries group all reptile skins together in one category, and in some cases fish skins are included as well. For example, all of the EEC countries engage in this practice, and three of these, France,

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Italy and F.R. Germany, are known from their CITES annual reports to be major traders in crocodilian skins. For these countries, and for any others which adopt similar broad classifications, it is impossible to identify from the Customs statistics alone the volume of trade in crocodilians skins.

A certain amount can be determined by extrapolation from the trade statistics of other countries which do identify crocodilian skins. However, extrapolation must be undertaken with caution. Significant differences in quantities reported by importers and exporters are frequent, even when both countries are using the same Customs category. The reasons for this have been described elsewhere (e.g. Bhagwati, 1974). Furthermore, some Customs statistics only list the countries of consignment, so that it is not always possible to determine the country of final destination of goods exported or the country of origin of goods imported. These limitations to the usefulness of Customs data are important in that they make it impossible to do more than produce broad indications of the commercial trends and a minimum estimate for the volume of trade.

The following countries have been found to specify crocodile and/or alligator skins in their Customs statistics (see Tables 17 - 25).

Indonesia	Ivory Coast
Japan	Malawi
Papua New Guinea	Singapore
Somalia	Sudan
Thailand	Zimbabwe

Indonesia

Customs data for Indonesia were only available for 1981 and 1982 (Table 17), recording 16 671 kg in 1982. Exports of "Dressed Snake and Crocodile Skins" were also recorded, but it was not possible to separate the two groups of reptiles. Whitaker *et al.* (1985) quoted figures obtained from the Department of Trade (Branch Office), Irian Jaya, indicating that crocodile skin exports from Irian Jaya alone amounted to 1399 skins in 1981 and 560 in 1982.

Ivory Coast

Customs data for the Ivory Coast were available only for the period 1977-1980 (Table 18). These record small quantities of raw skins exported, with a peak of 728 kg in 1978. Unfortunately, the statistics do not identify the destination or country of consignment.

Japan

Japanese trade statistics are evaluated more fully elsewhere (Dixon, Milliken and Tokunaga, this volume). They are extremely important insofar as Japan is one of the major importers of raw crocodile and alligator skins. However, Japan did not specify crocodilian skins in its export data during the period evaluated, but instead included them in the broad category for skins and leathers not elsewhere specified. As this includes anything that is not from a domestic animal, it is impossible to identify the amount of crocodilian skins or leather being exported.

Japanese Customs import statistics specify two categories of crocodilian skins: 41.01 271 for raw alligator and crocodile skins; and 41.05 210 for alligator and crocodile leather.

According to the Japanese data, imports of raw crocodilian skins have risen by 163% since 1977, (see Table 19). Most of the skins come from South American countries and are therefore not likely to be classic skins, but in

1980, 1981 and 1984, the number of skins imported from South America dropped slightly, and so the proportion of skins imported from South East Asia and the USA was slightly higher. Imports of raw crocodilian skins from Papua New Guinea, Indonesia and the USA have risen considerably, in absolute terms, since the late 1970s, reflecting the increase in Japan's total imports (Table 19).

Japanese imports of raw skins from Malaysia and the Philippines have been low throughout the period, never more than 360 kg of skins coming from the Philippines except in 1979 when nearly 1500 kg were imported. Imports from Malaysia (Peninsular Malaysia and Sabah) have generally been small but 1400 kg were reported from there in 1981 and 1100 kg in 1982. Imports from both Thailand and Singapore however have in some years exceeded 6000 kg (1977, 1979, 1980), but declined to almost nil in 1983. In 1984, there was a rapid recovery of trade to nearly 2500 kg from Singapore and 5600 kg from Thailand.

There appear to be few recorded imports of crocodilian skins from African countries; Kenya, Nigeria, South Africa and Zimbabwe are listed only occasionally and with relatively small quantities involved (see Table 19).

In contrast to the import trends of raw crocodilian skins, Japanese imports of crocodilian leather have declined, from a peak of 20 510 kg in 1979 to 7141 kg in 1984 (Table 19).

Malawi

Malawian Customs statistics (Table 20) record exports of raw crocodile skins to Europe (France and Switzerland), Japan, Zimbabwe and South Africa. The quantities are relatively small however, a maximum of 1673 kg being recorded in 1978 and no data appear to be available for the years since 1979.

Papua New Guinea

Until 1981 Papua New Guinea (PNG) Customs reports recorded its exports of raw crocodile skins only in terms of value (see Table 21). This provides only an indication of the commercial trends and does not necessarily reflect the volume of trade. The value of skins exported peaked in 1980 and then dropped by 19% in 1981. Unfortunately, no more recent Customs data are available.

Singapore

Crocodilian skins fall into three commodity classifications in the Singapore Customs data from 1979 to 1982: Crocodile Skins - Undressed (2119921); Crocodile and Alligator Skin Leather - Undressed (6116911); and Crocodile and Alligator Skin Leather - Dressed (6116912). For 1977 and 1978, there is a category of Undressed Crocodile Skins (211901) but unfortunately, the categories for dressed and undressed leathers also include snake skins. Thus, the quantities of imported crocodilian leather cannot be determined. A further complication is that, from 1983, Singapore's statistics no longer specify crocodilians at all. It should be noted also that Singapore is not known to report any of its imports from Indonesia which is probably an important source of crocodile skins.

Table 22 contains Singapore's published trade data for the period 1977-1982. Total imports of raw (undressed) skins and leather combined peaked at 58 563 kg in 1980 then declined by 44% to 31 722 kg in 1982. On average over 94% of Singapore's imports of crocodilian skins are raw.

From 1977 to 1979, South-east Asian and Australasian countries were the main sources of skins. Since then, South American countries have become increasingly important suppliers and, in 1982, accounted for 77% of Singapore's imports of raw skins. In 1977 and 1978, the biggest single contributor was Papua New Guinea but in 1979 Colombia took this position, Singapore importing 15 270 kg from this country. Colombia has remained the

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most important source since then. In contrast, imports from Papua New Guinea have declined. Other notable sources of skins have been Malaysia, especially Sabah (1977-82), Venezuela (1978), Japan (1980), USA (1981), Uruguay and Paraguay (1982) (see Table 22).

Singapore's Customs statistics record both domestic and total exports. Most of the "total exports" represent re-exports but in some years there have been notable quantities of domestic exports reported. Combined exports of raw skins and leathers reached a peak in 1980, at 92 461 kg, 99.6% of this being raw skins. Thus, 1980 was a peak year for both imports and exports.

Comparison of the import and export totals over the period 1977-1982 shows that in every year considerably larger quantities of crocodilian skins are exported than are imported (see Table 1). This is likely to reflect, to some extent, the imports from Indonesia that are not recorded in Singapore's data. It may also indicate other unrecorded imports or some level of illegal trade.

Table 1. Singapore's crocodilian skin imports compared with exports.

	Total Imports (kg)	Total Exports (kg)	Net Exports (kg)
1977	28022	88364	60342
1978	37520	63773	26253
1979	49731	59834	10103
1980	58563	92461	33898
1981	37772	75495	37723
1982	31722	44566	12844

NB: The figures for 1977 and 1978 are for raw skins only.

Source: Singapore Customs statistics

According to the Customs data, the majority of Singapore's exports of raw skins went to France, but both the volume and the percentage of skins going to France have declined since 1980. As a result, the exports to Japan (the second most important destination) have assumed increasing significance.

Somalia

The trade in crocodile skins from Sudan is examined in greater detail elsewhere (Dixon and Luxmoore, this volume). The latest Customs statistics available for Somalia refer to 1979 (Table 23). While it cannot be said that Somalia is indicated to have been a large-scale producer of raw crocodile skins, the recorded volumes of trade for the period 1977-1979 show a substantial increase, from 10 kg to Italy in 1977 to 1432 kg, in 1979, all to Italy. In the absence of more recent data, it is impossible to determine the trends of Somalian trade on the basis of Customs statistics alone.

Sudan

Sudan reports widely fluctuating exports of raw crocodile skins (see Table 24). France and Switzerland were the principal countries of consignment from 1977 to 1980. No data are available for 1981. In 1982, France continued to be an important consignee but Saudi Arabia was the destination of 54% of the skins exported and the UK of 16%.

Thailand

The Customs statistics for Thailand (Table 25) show that this country imports and exports crocodilian skins and leather. These data also indicate that the quantity of Thailand's exports of raw crocodile skins has declined.

Unfortunately, detailed analysis of the data is hampered by inadequate records. For the years 1980 to 1982, for example, the appropriate categories for crocodile leathers do not appear in the published export figures. Presumably during this period any exports of crocodilian leather were included in the categories for reptile leathers. The imports of both crocodilian skins and leathers during the period continued to be recorded in the more specific categories (see Table 25).

Recorded exports of raw crocodile skins have dropped from a peak of 13 619 kg in 1977 to 1265 kg in 1982 (Table 25). The majority of the skins exported since 1978 went to Japan according to the Thai data and comparison with the Japanese import data shows a relatively good correlation (see Table 2). The Japanese data for 1984 record a big increase in imports from Thailand (see Japan section).

Table 2. Trade in raw crocodile skins from Thailand to Japan.

	Exports from Thailand (kg)	Imports to Japan (kg)
1977	0	0
1978	4104	4576
1979	5365	6035
1980	4463	4008
1981	2885	2885
1982	1265	1299

Source: Customs statistics of Thailand and Japan.

Imports of raw crocodile skins (Table 25) have increased over the period for which data are available (1980-1983) and, with the exception of 540 kg from USA in 1981, they all came from Singapore, totalling 9170 kg over the four years.

Thailand's trade in crocodile leather indicates declining trends in volume of both exports and imports. Imports dropped notably in 1981 (Table 25) and the recorded quantity for 1983 represents a reduction of over 98% from that in 1977. Exports of leather have been very small; 20 kg to Malaysia in 1978 and 97 kg to Italy in 1983.

Zimbabwe

Customs data for Zimbabwe are available only for 1979 and 1980. These record exports of 490 kg in 1979 and 1954 kg in 1980. No details are given of the destination of these skins.

CITES STATISTICS

Methods

Data on the crocodilian skin trade were examined, from the annual reports submitted by the Parties to CITES for all years from 1977 to 1984. These data record the species (or other taxon), the countries from which goods are imported and to which they are exported and, in many cases of re-export, the country of origin of the skins.

Several points should be made clear regarding the application of these statistics to the analysis of world trade in crocodilians.

1. As the relevant CITES annual reports cover the period 1977 to 1984, it should be remembered that many countries became party to CITES in the course of these eight years and there were far fewer annual reports submitted in the earlier years than more recently.

2. The quality of the reporting, i.e. the detail and accuracy of the records, has improved considerably over the years. This fact, together with the increased number of Parties, means that any apparent trends in trade over the period are not necessarily a reflection of any real trends but may merely reflect improved information.

3. The quality of reports varies between Parties. For example, until 1982, Japan recorded most of its crocodilian imports as either Alligatoridae or Crocodylidae. In some cases, the species may be inferred from the country of origin or export but this is not always possible and should only be undertaken with caution.

4. Even when countries of origin are indicated, these are not always accurate and species are frequently recorded as originating in countries where they do not occur.

5. The CITES data used refer to trade in skins, but in some cases the trade has been reported by weight, length, width or area of skin (and in one case as 'pairs of skins'). These reports have been included in the tables of data but, because any standard conversion factors are likely to be somewhat dubious, only the trade reported by number of skins has been used in the analyses for the present report. For this reason and because the number and quality of annual reports is still deficient, the data presented are likely to underestimate the actual quantity of trade. However the underestimate may not always be significant since it appears that quantities reported by weight, area or length by an importing country are frequently reported by number of skins by the exporting country, and vice versa.

Using the data from CITES annual reports, the minimum gross and net volumes of imports and exports were estimated for the commercially predominant species. The quantity of trade reported in the other species is referred to in the relevant species sections.

The CITES annual report statistics also include data on countries of origin of re-exported skins and, for some species, these have been used to obtain a further indication of the amount that may have originated in each country. Where there are data on a country of origin only from re-exports, these have been taken to indicate the minimum quantity of trade from the source country. However, where there are also data on direct exports from a possible country of origin to a re-exporting country, the largest of the two figures has been used, to avoid double counting. It should be appreciated that this is a somewhat simplistic view since skins are not necessarily re-exported by a country in the same year that it imported them.

All the tables in this section are derived from data in CITES annual reports except where otherwise specified.

APPENDIX I SPECIES

Crocodylus acutus American Crocodile

Crocodylus acutus is found from Florida south through Central America to Ecuador and around the Caribbean Sea (Groombridge, 1982). Until 1979, the species was listed in Appendix II of CITES. However, in that year the population of the USA was transferred to Appendix I and in 1981 all other populations were moved to Appendix I. The change in volume of trade in skins appears to reflect this transfer (see Table 3).

The net trade for this species from 1977 to 1984 was 45 467 skins (Table 26).

Table 3. Minimum gross world trade in Crocodylus acutus skins.

	Appendix I	Appendix II
1977		1250
1978		2360
1979		3588
1980	2	39950
1981*	291	10901
1982	421	-
1983	599	-
1984	106	

* = Year in which all populations were transferred to Appendix I.

NB: For net trade see Table 26.

Data for the period 1977 to 1979 show a steady increase in the volume of trade, but this may only be the result of improved reporting. In 1980, the quantity of skins reported increased by an order of magnitude, possibly reflecting anticipation of the transfer to Appendix I. However, by far the major importer of skins that year was Italy which imported 29 210 skins from Paraguay, where the species does not occur. This is an unlikely route for the export of C. acutus and it is therefore possible that these skins were wrongly identified.

From 1982 to 1984, the only recorded importer of more than a hundred skins of C. acutus was Switzerland whose imports were from Italy and France. The last two countries have imported large numbers of skins in previous years (see Table 26) and their recent re-exports may be of old stocks. The only country to have entered a reservation on this species is Switzerland; but this was withdrawn when C. acutus was transferred to Appendix I.

No commercial imports directly from potential countries of origin have been recorded since 1981, but in that year 2811 were imported to Italy from Panama. In 1981 Colombia was the only specified country of origin for re-exports, where the species occurs; the net trade of Colombian origin being 3793 skins.

Crocodylus cataphractus African Sharp-nosed or Slender-snouted Crocodile

This species occurs throughout western and central Africa. However, details of status and distribution of C. cataphractus are limited. The species has declined overall owing to hunting, and loss of habitat, and it may be experiencing increasing pressure as a result of the decline of C. niloticus

World Trade

populations (Groombridge, 1982).

Table 4 shows the minimum world trade volume in C. cataphractus skins. No trade was reported in 1977 and 1978. Most of the trade reported subsequently was of skins moving from France to Italy and in 1979 this was the only trade reported.

Table 4. Minimum world trade in Crocodylus cataphractus skins.

	1979	1980	1981	1982	1983	1984
GROSS	3736	11306	8420	9105	12679	2030
NET	3736	11256	8192	9027	7615	2030

A net total of 41 856 skins were traded between 1980 and 1984 (see Table 27). Italy was a net importer of 39 440 skins in the period 1979-1984. The only other notable net importer was Denmark (208 skins).

The only possible countries of origin which appear as exporters are Congo and Gabon, although exports reported directly from Congo were only significant in 1980, 1983 and 1984. If the data on countries of origin reported by re-exporting countries are also considered, the totals of skins emanating from these countries of origin are substantially different (see Table 5). It is believed that some of the C. cataphractus skins reported as exports by Congo are in fact misreported skins of C. niloticus (Caldwell, pers. comm.).

Table 5. Minimum gross trade in Crocodylus cataphractus skins reported as exported from or originating in countries where the species occurs.

	1979	1980	1981	1982	1983	1984
Congo	3165	9209	6509	6663	4967	2030
Gabon	-	811	1612	585	2044	-
Mali	-	-	-	980	975	-
Togo	571	779	4	-	-	-
Zaire	-	-	289	616	-	-
TOTAL	3736	10799	8414	8844	7986	2030

Thus according to the CITES statistics, Congo has been the major source of C. cataphractus skins. This country acceded to CITES in 1983 and did not enter a reservation on this species. Of the other source countries, Togo and Zaire have been Parties to CITES since 1979 and 1976 respectively. Thus, C. cataphractus products from these countries should no longer be in commercial international trade. Gabon and Mali are not Parties to CITES.

The only countries that have entered reservations to CITES on trade in this species are Austria (imported 33 skins in 1983), France (reservation withdrawn 10 Dec '84), Italy (withdrawn 1 Jan '84) and Zambia (no trade reported).

Crocodylus intermedius Orinoco Crocodile

This species is restricted to the Orinoco drainage of Venezuela and Colombia, where it is now extremely rare. Its decline has been attributed to severe hunting for the skin trade (Groombridge, 1982). Up until 1984, no trade in the skin of this species has been reported in the annual reports of CITES Parties.

Crocodylus moreletii Morelet's Crocodile

This species is found in Belize, Guatemala, Mexico and possibly Honduras (Groombridge, 1982). According to Abercrombie *et al.* (1982), in the past there has been a regular trade in C. moreletii skins between Belize and Belgium but this is likely to have declined in the wake of recent legislation and the ratification of CITES by Belgium effective from 1 January 1984.

Only small quantities of skins have been recorded in trade. F.R. Germany imported at least 113 skins from Italy in 1979 and 342 in 1980. The USA reported imports of one skin in 1980, one in 1981, four in 1982 and two in 1984 that were seized as illegal. No country has entered a reservation to CITES on trade in this species.

Crocodylus niloticus Nile Crocodile

C. niloticus is widespread throughout Africa. However, the species is subject to severe pressures from hunting and habitat loss in much of its range (Pooley, 1982).

From the inception of CITES, this species was listed in Appendix I. The population of Zimbabwe was transferred to Appendix II in 1983, to allow trade from ranching operations. In 1985 the populations of the following countries were also transferred to Appendix II, subject to annual export quotas (shown in parentheses): Cameroon (20), Congo (1000), Kenya (150), Madagascar (1000), Malawi (500), Mozambique (1000), Sudan (5000), Tanzania (1000), Zambia (2000).

Table 6 summarises the gross and net trade in C. niloticus skins from 1977 to 1984. Although the data for 1980 indicate an order of magnitude increase in trade over that reported in 1979, this is much more likely to reflect improved reporting rather than an actual increase in the trade, although there may have been some increase.

Table 6. Minimum world trade of Crocodylus niloticus skins.

	1977	1978	1979	1980	1981	1982	1983	1984
GROSS	1285	175	7572	24082	30003	27111	34879	6510
NET	1258	175	3706	22094	22253	20101	28983	6115

The minimum net trade recorded from 1977 to 1984 was 104 685 skins. Table 28 indicates clearly that for most years Italy appears to have been the largest net importer of C. niloticus, with net imports of 68 727 skins over the same period, accounting for 66% of the total. France is the second major net importer, although it only appears as one in 1979, 1983 and 1984. This is largely because before 1983 it only reported re-exports, not imports, and the African source countries reported few exports. France's gross exports indicate, however, that this country had been obtaining large supplies. These exports totalled 11 608 skins in 1980 and 10 390 in 1981, and it is not known what proportion this represents of the skins entering France.

Italy and France both held CITES reservations on this species, until 1 January 1984 and 10 December 1984 respectively.

It is worth noting that, despite its increasing market for crocodilian skins, Japan does not appear to be importing many skins from this species and has not held a reservation. This may be because the traditional markets for C. niloticus have been European and the historical commercial arrangements between the African countries and Europe are well established. It is evident though, that Japan is trying to increase its share of the market for African skins, and a delegation of Japan's reptile skin dealers' association toured Africa in 1985 with this aim.

Of the potential source countries, the major exporters reported since 1980 have been Sudan, Togo, Nigeria and Somalia, in that order (see Table 28). Somalia is not a CITES Party and Sudan's ratification only became effective in January 1983, with a reservation on C. niloticus. However, Togo and Nigeria have been Parties throughout the period; they have not entered reservations on this species, moreover Nigeria does not issue any CITES export permits. The other countries which do hold reservations are Botswana, Zambia and Zimbabwe. None of these appears to have been a significant exporter until 1984, when Zimbabwe and Zambia became the major sources.

If the reported countries of origin of imports and re-exports are considered, then a slightly different picture is obtained. Table 7 indicates the minimum gross trade reported for the specified countries of origin and export that are potential origins of C. niloticus skins.

Table 7. Minimum gross trade in Crocodylus niloticus skins reported as exported from or originating in countries in which the species occurs.

	1979	1980	1981	1982	1983	1984
Botswana	1158	6	3	-	3	-
Cameroon	-	-	1781	1718	22	-
Chad	-	-	-	-	71	-
Congo	185	834	442	165	3	-
Egypt	24	-	-	2	-	-
Ethiopia	-	-	-	-	-	1
Gabon	-	476	620	-	-	-
Kenya	-	-	1	1	-	-
Liberia	-	-	230	418	521	336
Madagascar	1	-	4	20	32	5
Malawi	-	-	-	-	341	415
Mali	-	1785	2781	3137	2026 *	345
Namibia	-	-	-	14	-	-
Nigeria	1	6730	10304	4373 *	731	1
Somalia	-	1266	847	-	1	469
South Africa	3	2	403	2	-	32
Sudan	-	3885	7123 *	5035 *	15422	-
Swaziland	1	-	-	-	-	-
Tanzania	-	-	3	5	15	7
Togo	1746	1806	818	2817	3560	-
Zaire	-	-	-	603	-	-
Zambia	4	-	2	-	167	657
Zimbabwe	-	12	476	1667	1835	4268
TOTAL	3123	16802	25838	19977	24750	6536

* an additional quantity of trade was reported by area or length.

From Table 7 it is evident that Mali and, recently, Zimbabwe have also been important sources of C. niloticus skins, even before the transfer of Zimbabwe's population to CITES Appendix II. The effects of the transfer of

nine further populations to Appendix II remain to be seen. It is noteworthy that, with the exception of Sudan, Zambia and Zimbabwe, the populations of all the principal sources of C. niloticus up to 1985, remained in Appendix I.

The withdrawal of the reservations within the EEC appears to have had a profound effect on the patterns and levels of trade in crocodilian skins. There is some evidence that the imports of C. niloticus increased in 1983 in advance of the new regulations, but the decline in 1984 is indisputable and substantial.

Crocodylus palustris Mugger or Marsh Crocodile

The range of C. palustris includes parts of India, Iran, Nepal, Pakistan, Sri Lanka and possibly Bangladesh (Groombridge, 1982). Up to 1984, only one skin had been reported in trade. There is some experimental farming of this species in India which could lead to commercial production (Luxmoore et al., 1985).

Crocodylus porosus Saltwater Crocodile (see Appendix II section)

Crocodylus rhombifer Cuban Crocodile

This species is endemic to Cuba (Groombridge, 1983). Up to 1984 no trade in its skin had ever been reported in the annual reports of CITES Parties. However there is believed to be some trade in skins, of unknown origin, emanating from a crocodile farm in Cuba (Luxmoore et al., 1985).

Crocodylus siamensis Siamese Crocodile

C. siamensis once occurred in Indonesia (Borneo, Java and possibly Sumatra), Kampuchea, Lao, Peninsular Malaysia, Thailand and Viet Nam. It now appears to be extinct in the wild (Groombridge, 1982).

Trade in C. siamensis is not surprisingly very small and probably all comes from Thailand's Samutprakan Crocodile Farm. Only Thailand holds a reservation on trade in this species. Moreover, the Samutprakan Crocodile Farm has been registered by the CITES Secretariat as a captive-breeding operation entitled to an exemption on CITES Appendix I control with respect to trade in C. siamensis.

According to the CITES data, Japan imported 300 skins from Thailand in 1981, 200 in 1982 and 800 plus 1445 kg in 1984. The only other trade reported in CITES statistics since 1977 is two skins imported by the USA. The Samutprakan Crocodile Farm reports exporting 1500 crocodile skins (of all species) to Japan and 1100 skins to France from 1980 to 1982. These skins may have been from C. siamensis, C. porosus or from hybrids between the two (Luxmoore et al., 1985).

Gavialis gangeticus Gharial

G. gangeticus occurs in Bangladesh, India, Nepal and Pakistan and is nominally protected by legislation in all these countries (Groombridge, 1982). No trade in skins of this species has ever been recorded in the annual reports of CITES Parties.

Tomistoma schlegelii False Gharial

T. schlegelii is restricted in range to the Malay Peninsula, and the islands of Borneo and Sumatra (Groombridge, 1982). It is farmed on a small scale in Indonesia, Singapore and Thailand (Luxmoore et al., 1985). However, no trade in its skins has been reported in the annual reports of CITES Parties.

APPENDIX II SPECIES

Crocodylus acutus American Crocodile
(see Appendix I section)

Crocodylus johnsoni Australian Freshwater Crocodile

C. johnsoni is found only in northern Australia where it was depleted by exploitation for the skin trade, which was curtailed by protective measures being enacted between 1962 and 1974 in four States (Groombridge, 1982). Although it is in Appendix II, it has been totally protected since 1974, and banned from export since 1972.

CITES annual report statistics record fluctuating quantities of skins in trade, totalling 8739 skins over the period 1978 to 1984. No trade was reported in 1977 or 1980; 4133 skins were recorded in 1978, 2915 in 1979, 300 in 1981, 610 in 1982, 624 in 1983 and 157 in 1984. All skins were reported as re-exports from France, with Switzerland importing 7868 (90% of the total) and Austria importing the remainder.

Crocodylus novaeguineae New Guinea Crocodile

C. novaeguineae occurs in Indonesia (the Aru Islands and Irian Jaya), Papua New Guinea and the Philippines (Groombridge, 1983). Two subspecies are listed in the CITES Appendices; Crocodylus novaeguineae novaeguineae in Appendix II and Crocodylus novaeguineae mindorensis in Appendix I. Some taxonomists regard the two as distinct species (Groombridge, 1982).

Table 8 summarises the world trade in C. novaeguineae skins, on the basis of CITES annual report data. These indicate that the total net trade from 1977 to 1984 was 233 882 skins. There was also a large quantity recorded in other units for which there is no satisfactory conversion factor (see Table 29).

Table 8. Minimum world trade in Crocodylus novaeguineae skins.

	1977	1978	1979	1980	1981	1982	1983	1984
GROSS	24900	59179	53067	29858	31941	14370	34938	34539
NET	17252	44938	42046	27536	31336	14293	27325	29156

Papua New Guinea (PNG) and Indonesia are the only important sources of C. novaeguineae skins. PNG, the principal source, has not submitted annual reports to CITES for the years 1981 or 1982 and this probably explains the apparently very low volume of trade from this country in those two years. Moreover, the PNG report for 1980 only provided data for the first half of the year and these were included with the 1979 report. Thus the CITES data used for 1979 are inflated and those for 1980 understate PNG's exports. However, Hemley and Caldwell (1986) report export figures based on information received from PNG's Department of Primary Industry (Table 9). These can be compared with records in the CITES statistics of direct exports from potential countries of origin and re-exports where the countries of origin are reported (Table 10). Comparing the tables, there appears to be no correlation between the two sets of statistics; in fact neither is even consistently higher than the other. The average annual export from the Department of Primary Industry's data (23 611 skins) is somewhat higher than the average indicated by the CITES data (17 396 skins) over the same period (1979-1983) and the first figure should be taken as a minimum.

The level of exports from Indonesia is recorded in Table 10 and appears to have increased from about 1500 skins in 1981 to over 7000 in 1984.

Table 9. Exports of Crocodylus novaeguineae skins from Papua New Guinea.

	1979	1980	1981	1982	1983
Wild	34836	27249	14290	23259	13807
Ranched	646	460	731	1474	1304
TOTAL	35482	27709	15021	24733	15111

Source: Hollands in litt., cited in Hemley and Caldwell (1986).

Table 10. Minimum gross trade in Crocodylus novaeguineae skins reported as exported from or originating in countries in which the species occurs.

	1977	1978	1979	1980	1981	1982	1983	1984
Indonesia	6271	6064	1154	3851	1455	3503	6977	7391
PNG	14740	38970	41160	13976	15097	5812	10934	22606
Philippines	-	-	-	-	60 *	-	-	-
TOTAL	21011	45034	42314	17827	16612	9315	17911	29997

*60 Crocodylus novaeguineae mindorensis skins were reported as imports to USA. This subspecies is in Appendix I.

The principal reported importers of C. novaeguineae skins from 1977 to 1984 were Japan (66 727 skins gross), France (55 802), Switzerland (52 239), Italy (34 039), Singapore (27 967) and USA (28 372). Japan, Switzerland and to some extent Italy have imported large quantities throughout the period. Japan became particularly important in 1983 and 1984, accounting for 46% and 49% of gross world imports in the two years respectively. Trade to France, Singapore and the USA has been sporadically high but data on Singapore are poor because it is not a CITES Party. The figure for imports to France is also deceptive because it is derived only from the data of exporting countries. France has re-exported a total of at least 123 735 skins over the period, an average of over 15 000 skins a year; it may have been importing much more than this amount. Thus it appears that France was previously the biggest importer of this species but that its position has now been usurped by Japan.

Crocodylus porosus Saltwater Crocodile

The range of C. porosus extends from Sri Lanka and the east coast of India across coastal South-east Asia and the Philippines to Indonesia, Papua New Guinea, the Solomon Islands and northern Australia (Groombridge, 1982). It is considered to be depleted throughout most of its range, adequate populations existing only in parts of northern Australia and New Guinea.

In 1979, all populations except that of PNG were transferred from Appendix II to Appendix I. However, most of the skins in trade appear to have originated in PNG which is why the species is included in this section. In 1985 the populations of Australia and Indonesia were transferred to Appendix II; the former, to allow trade from ranching operations, and the latter with an annual export quota of 2000 for 1985 and 1986.

Table 11. Minimum world trade in Crocodylus porosus skins.

	1977	1978	1979	1980	1981	1982	1983	1984
GROSS:	16109	17074	15037	3691	7388	2247	7169	6431
NET:	13931	11541	9188	3391	5134	2117	5398	5358

Table 11 summarises the gross and net world trade in C. porosus skins from 1977 to 1984. According to these data, the volume of trade in C. porosus has declined considerably since the species (except PNG population) was transferred to Appendix I in 1979.

According to CITES annual reports, PNG is the principal country of origin (Table 12), but Indonesia is also an important source country, and Malaysia has been a minor one. Neither of the latter two countries holds a CITES reservation on this species and any exports from them since 1979 are potentially in contravention of the Convention.

Table 12. Minimum gross trade in Crocodylus porosus skins reported as exported from or originating in countries in which the species occurs.

	1977	1978	1979	1980	1981	1982	1983	1984
Australia	-	-	-	35	-	-	-	-
Indonesia	3877	2415	375	-	1155	126	345	-
Malaysia	-	77	74	-	186	-	56	-
PNG	6089	9119	7424	2479	3147	651	4554	5239
TOTAL	9966	11611	7873	2514	4493	777	4955	5239

Table 13. Exports of Crocodylus porosus skins from Papua New Guinea.

Source	1979	1980	1981	1982	1983
Wild	7442	5717	3915	3926	3155
Ranched	184	80	366	927	301
TOTAL	7626	5797	4281	4853	3456

Source: Hollands in litt., cited in Hemley and Caldwell (1986).

As PNG is the major source of C. porosus skins, the same CITES data problems exist as for C. novaeguineae (see above). Again, however the exports reported by PNG's Department of Primary Industry (Hollands in litt., cited in Hemley and Caldwell, 1986) (Table 13) can be compared with the CITES data on skins exported from or originating in potential countries of origin (Table 12).

As PNG has not completed annual reports to CITES for the years 1980 to 1982 it is not surprising that the CITES data for those years show smaller exports from this country than do the figures from the Department of Primary Industry. The average annual export according to the latter is 5203 skins, and this should be taken as the minimum export from this country.

On the basis of gross imports reported (Table 30) it appears that the major importers from 1977 to 1984 have been F.R. Germany (13 892 skins), Switzerland (13 932), France (12 762), Singapore (10 506) and Italy (9604). Japan's imports have not been quite so large but it is noteworthy that in 1983 this country appears to have been the single biggest importer of C. porosus skins. Again the French import figures are deceptive, since its re-exports over the eight-year period total nearly 29 000 skins, implying a minimum average import of over 4000 skins a year.

Austria, Japan and Thailand all hold reservations on this species. F.R. Germany withdrew its reservation in July 1982, Switzerland in January 1983, Italy in January 1984 and France in December 1984.

Alligator mississippiensis American Alligator

A. mississippiensis is to be found across the south-eastern USA from North Carolina south to Florida and west to Texas (Groombridge, 1982). In Louisiana, increased numbers of Alligators have permitted the development of a state-managed harvest (Joanen and McNease, 1982). In Florida a pilot programme has been operating since 1981 to supplement the stocks of Alligator farmers with eggs taken from the wild (Luxmoore et al., 1985). Nuisance Alligators are hunted in Florida; limited hunting is allowed in Florida and Texas (Hemley and Caldwell, 1986).

In 1979, this species was transferred from Appendix I to Appendix II of CITES in recognition of the increase in populations and there has been a resultant increase in trade. The total gross trade appears to have declined slightly since 1981 (see Table 14) to 32 388 skins in 1984.

As the USA is the only original source of skins, this makes estimation of the total entering trade for the first time relatively easy, because there is only one country to take into consideration. Table 14 shows the gross US exports on the basis of CITES annual reports.

Table 14. Exports of Alligator mississippiensis skins.

	1977	1978	1979	1980	1981	1982	1983	1984
Gross US Exports	0	325	5404	8994	29298	25835	20069	21519
Gross World trade	0	325	5470	13087	43945	39359	38997	32388
Net World trade	0	325	5338	4901	15793	17021	16913	12968

Table 15. Exports to France of Alligator mississippiensis skins from USA.

	1979	1980	1981	1982	1983	1984
US Exports to France	5404	8990	18180	14016	10676	9236
Percentage of Total US Exports	100%	99.9%	62.0%	54.3%	53.2%	49.9%

France appears to be the destination of the largest quantities of A. mississippiensis skins exported from the USA (see Table 31), although the overall percentage of US exports going to France has declined (see Table 15). Many of the skins exported to France have subsequently been reimported to the USA, presumably after tanning.

Italy is the other major importer of A. mississippiensis skins although many of these appear to come via France. The quantities reported over the period 1981-1983 were relatively stable, at around 9500 skins, but fell in 1984 (Table 16).

Table 16. Italian imports of Alligator mississippiensis skins from France and USA.

	1980	1981	1982	1983	1984
Direct from US	0	8037	6056	3981	5393
Imported from France	0	968	3568	5426	0
TOTAL	0	9005	9624	9407	5393

Japan appears to be the only other destination of significant quantities of A. mississippiensis with gross imports of 5355 skins in 1982, 10 463 in 1983 and 6542 in 1984; however only half of the skins in 1983 were imported directly from the USA, and 2000 of them reportedly came from Paraguay, where the species does not occur.

DISCUSSION

There is a variety of factors which preclude a valuable global comparison between CITES and Customs data. The major factors are:

- that the collection of data for the two sources is carried out in different ways;
- that Customs data, and some CITES data, do not refer to particular species;
- that very few countries even have a category for crocodilian skins in their Customs data, and neither of the two major importing countries (France and Italy) has such a category;
- that the Customs data that do exist for crocodilian skins are generally split into raw and processed skins whereas CITES data are not so divided;
- that Customs statistics are generally reported in kilogrammes while CITES data mostly record numbers of skins;
- and that the quality of the Customs data and CITES annual report statistics is variable and the latter are particularly poor for the earlier years of CITES implementation, although they have improved slightly in successive years.

We have not, therefore, undertaken a comprehensive comparison of the data from the two sources. The best data, and those that are intended to be of the greatest use for analysis of species trade, are the CITES annual report statistics. We have used these as a basis for consideration of the trade from each region of origin. In certain cases, however, it is possible to make a general comparison between these data and those in the Customs reports. It appears that the country for which this can most usefully be done is Japan.

Major Sources

Africa

The bulk of the skins originating in Africa are undoubtedly of Crocodylus niloticus, although, in some years, notably 1980, large quantities of C. cataphractus were reported to have been exported.

According to the CITES statistics the net world trade in skins of these two species increased from 33 350 in 1980 to 36 598 in 1983, but then fell sharply to 8145 in 1984. The initial apparent increase is likely to some extent to have been due to improved reporting and to the growing number of Parties to CITES producing annual reports, while the decline in 1984 seems to have been due to the withdrawal of the European reservations and so probably represents a true fall in the level of trade. However, it must be stressed that the reported quantities represent only a minimum volume of trade; much of the trade is carried on between countries that are not party to CITES, such as Ivory Coast, which is known from its Customs statistics to be an exporter of crocodile skins. Until August 1985, under CITES regulations, there was only one legitimate African source of C. niloticus, that being Zimbabwe, whose population was transferred to Appendix II in 1983, and all its exports are now from ranching operations.

It would appear that most of the classic crocodilian skins exported from Africa go to Europe where, up to 1984, the main destinations were France and Italy but Switzerland, the UK and F.R. Germany were also important in varying degrees.

Asia and Australasia

The levels of commercial crocodilian skin trade in Asia appear to have fluctuated quite considerably for each country from one year to another. Comparison of the CITES and Customs statistics is most useful for Japan and to some extent for Thailand, both of which produce Customs data on the crocodilian skin trade and are Parties to CITES. The only other country in this region to produce relevant Customs data is Singapore, a non-Party.

Indonesia is an important exporter of skins from C. porosus and C. novaeguineae. The extent to which its exports can be inferred from the CITES data is indicated in Tables 10 (C. novaeguineae) and 12 (C. porosus) and was discussed more fully by Luxmoore (1986). The CITES figures are likely to underestimate the trade considerably, and the best estimates are provided by the Japanese Customs import figures. Japanese imports of raw crocodilian skins from Indonesia have risen considerably in the past three years (Table 19) - by approximately 200% since 1981 - giving a total of 72 601 kg of skins from 1981 to 1984. However, the Indonesian CITES statistics recorded no exports to Japan over this period and the Japanese CITES statistics reported only small quantities of imports of Indonesian skins in 1984.

C. novaeguineae and C. porosus are also the two main species exported from Papua New Guinea. As this country has not produced Customs statistics since 1981 nor CITES reports for 1981 or 1982, the best available data on its trade are those reported by the Department of Primary Industry in Tables 9 (C. novaeguineae) and 13 (C. porosus). These show that, for both species, the PNG exports have fallen by 40-50% from 1979 to 1983, to about 15 000 C. novaeguineae skins and about 3500 C. porosus skins. Data from the annual reports of CITES Parties also indicate a decline in the quantity of skins entering trade. However, this would be expected if increasing quantities of skins were going to Singapore, which is not a CITES Party, or to France, which has not reported imports. Both of these countries have been major importers in previous years (see page 15).

Thailand's Customs statistics are discussed in full on pages 5/6. Its increase in imports of raw skins and decrease in the exports indicate a domestic market that is dependent on crocodile skins perhaps to supply a

tourist curio industry.

Singapore is a significant trader in crocodilian skins but its total volume seems to have declined from 1980 to 1982. Its Customs statistics specifying crocodilian skins were extremely useful as an aid to monitoring the trade and it is unfortunate that from 1983 the data have been consolidated into categories which include skins from other animals. Many skins in the past have been reported as 'domestic exports'. It is doubtful that there is much of a crocodile skin harvest in Singapore, but there are a number of crocodile farms producing C. porosus, while Caiman crocodilus and Crocodylus novaeguineae are also reported to be raised for meat and skins (Luxmoore et al., 1985).

North America

The only important source of classic crocodilian skins in this region is the USA which exports Alligator mississippiensis. US exports appear to have leapt from well under 10 000 skins in 1980, to 30 000 in 1981 declining to 20 000 in 1983. State-managed harvests are now carried on in Florida and Louisiana.

Major Consumers

Japan is probably the world's biggest consumer of crocodilian skins and the growth of the Japanese market in the past four years is remarkable considering the pattern of decline amongst many other consumer countries. However, most of its imports are not of classic crocodilian skins. Although significant quantities of skins enter Japan from Asian sources, the vast majority of its imports come from South America, perhaps because it is only South American countries which can supply the volume of skins necessary to answer the Japanese demand, and because these skins are relatively cheap.

The two major consumers of classic skins are France and Italy, both of which have large and long-established tanning industries. Although they have both held reservations on CITES Appendix I species in the past, as of 1 January 1984, these were no longer valid, with the entry into force of EEC Regulation 3626/82. As a result, dramatic changes in the patterns of trade in Appendix I species appear to have taken place. However, the transfer to Appendix II of nine countries' populations of C. niloticus and of C. porosus in Indonesia, from 1985, is likely to restore some of the trade which has been lost to the industries in France and Italy.

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Table 17. INDONESIA Customs statistics.

4101920 Crocodile and Alligator Skin and Hide

EXPORTS	<u>1981</u>	<u>1981</u>	<u>1982</u>	<u>1982</u>
<u>Destination</u>	(Pcs)	(kg)	(Pcs)	(kg)
Singapore	5009	16683	14526	15300
France	-	-	6	26
F.R. Germany	-	-	7780	1345
TOTAL	5009	16683	22312	16671

Source: Foreign Trade Statistics by Comodity and Country of Destination and Port of Export, Central Bureau of Statistics, Foreign Trade Statistics, Jakarta.

Table 18. IVORY COAST Customs statistics.

41.01 80 Raw Crocodile Skins

EXPORTS	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
	(kg)	(kg)	(kg)	(kg)
Divers N.D.A.	214	728	322	279

Source: République de Côte D'Ivoire, Ministère de L'Economie et Finances, Direction Générale des Douanes, Service des Statistiques Douanières, Statistiques du Commerce Extérieur de la Côte d'Ivoire

Table 19. JAPAN Customs statistics.

41.01 271 Alligator and Crocodile Skins

IMPORTS Source	1977 (kg)	1978 (kg)	1979 (kg)	1980 (kg)	1981 (kg)	1982 (kg)	1983 (kg)	1984 (kg)
Australia	-	715	-	-	-	-	-	-
Belgium	-	-	944	-	-	-	-	-
Bolivia	1600	-	-	-	-	-	-	-
Colombia	8996	16231	17409	16778	7992	6290	6111	6230
French Guiana	-	4472	5832	-	-	-	-	-
Guyana	230	879	-	-	-	-	-	-
Indonesia	9373	5731	9543	7476	9554	15222	19348	28477
Kenya	132	-	-	-	-	-	-	-
Malaya	260	-	-	-	1375	1000	-	-
Neth. Antilles	5806	4975	15785	1080	-	-	-	-
Nigeria	-	734	-	-	-	-	-	-
Pakistan	-	-	-	64	-	-	-	-
Panama	11136	4086	-	856	-	-	-	-
Papua N Guinea	5839	9635	16311	17862	20310	14274	21827	17816
Paraguay	25544	42259	52343	35546	49558	138576	158676	117456
Peru	-	1445	-	-	-	-	-	-
Philippines	353	264	1479	215	110	55	193	54
Sabah	-	-	-	382	621	100	-	960
Solomon Is.	181	-	-	-	72	772	871	544
Singapore	6782	2475	4244	6552	3434	424	91	2470
South Africa	-	170	-	-	-	-	380	-
Suriname	-	1606	29870	-	-	-	-	-
Switzerland	-	-	496	-	-	-	-	-
Taiwan	-	-	-	-	-	-	-	330
Thailand	-	4576	6035	4008	2885	1299	-	5642
Venezuela	98	2224	-	-	-	-	-	-
M M Car *	-	377	247	119	-	-	-	-
USA	-	-	1255	256	9035	25519	26036	21009
Zimbabwe	-	-	-	-	470	-	-	128
TOTAL	76330	102854	161793	91194	105416	203531	233533	201116

* Marshall, Mariana and Caroline Islands

Table 19: JAPAN, cont.

41.05 210 Alligator and Crocodile Leather

IMPORTS Source	1977 (kg)	1978 (kg)	1979 (kg)	1980 (kg)	1981 (kg)	1982 (kg)	1983 (kg)	1984 (kg)
Argentina	-	188	168	-	-	-	-	-
Bolivia	1100	1266	2693	3222	2888	1631	975	1006
Brazil	-	222	-	-	-	-	-	-
Colombia	2301	1543	290	-	-	145	6	186
F.R.Germany	-	-	-	230	-	-	-	-
France	1001	926	520	420	256	179	869	752
Honduras	-	-	-	-	-	-	-	2021
Hong Kong	109	694	-	-	-	-	49	-
Indonesia	-	-	-	-	-	105	-	311
Italy	238	6	48	47	-	406	231	43
Mexico	59	-	-	50	-	-	-	-
Neth. Antilles	245	-	-	-	-	-	-	-
Panama	138	454	2661	92	-	-	-	-
Papua N Guinea	-	-	-	-	-	50	-	-
Paraguay	6687	6682	13972	7349	9989	2034	521	2550
Singapore	165	110	97	86	46	14	17	210
Spain	-	-	-	66	-	-	-	-
South Africa	70	-	-	-	-	-	-	-
Sudan	-	-	60	-	-	-	-	-
UK	13	70	-	12	-	-	-	-
USA	-	-	1	-	-	272	311	62
TOTAL	12126	12161	20510	11574	13179	4836	2979	7141

Source: Japan Tariff Association, Tokyo, Japan.

Table 20. MALAWI Customs statistics.

41.01 00 03 Skins, Raw of Crocodile

EXPORTS	<u>1976</u> (kg)	<u>1977</u> (kg)	<u>1978</u> (kg)	<u>1979</u> (kg)
<u>Destination</u>				
France	-	-	-	1322
Japan	560	-	-	-
South Africa	400	-	-	-
Switzerland	-	450	1118	-
Zimbabwe	430	-	555	-
TOTAL	1390	450	1673	1322

Source: Annual Statement of External Trade. National Statistical Office P.O.
Box 333, Zomba.

Table 21. PAPUA NEW GUINEA Customs statistics.

Crocodile Skins

EXPORTS Destination	<u>1977</u> (K'000)	<u>1978</u> (K'000)	<u>1979</u> (K'000)	<u>1980</u> (K)	<u>1981</u> (K)
F.R. Germany	15	-	-	-	-
France	245	454	702	428876	566248
Indonesia	-	-	-	140	-
Italy	6	-	-	-	-
Japan	213	329	477	821321	583442
Singapore	316	441	430	369708	170550
UK	-	7	2	-	-
USA	19	-	-	-	-
TOTAL	814	1231	1610	1620045	1320241

K'000 = Kina x 1000.

NB Figures indicate value; units of reporting changed from K'000 to Kina in 1980.

Source: National Statistical Office. P.O. Wards Strip, Papua New Guinea.

Table 22. SINGAPORE Customs statistics.

211901 (41.01.510) and 2119921 (41.01 610) Crocodile Skins Undressed

IMPORTS <u>Origin</u>	<u>1977</u> (kg)	<u>1978</u> (kg)	<u>1979</u> (kg)	<u>1980</u> (kg)	<u>1981</u> (kg)	<u>1982</u> (kg)
Afghanistan	-	110	-	-	-	-
Australia	-	1150	-	-	-	-
Colombia	7692	12692	15270	29961	21299	17365
F.R. Germany	-	-	-	190	-	-
Hong Kong	64	-	-	-	-	450
Japan	197	1847	3278	2620	1898	-
Malaysia Pen.	1800	481	1571	-	437	-
Neth. Antilles	-	-	-	655	-	-
Panama	-	-	-	1571	-	-
Papua New Guinea	15524	17585	13169	13773	8527	3736
Paraguay	-	-	560	998	-	3509
Philippines	-	350	600	-	-	469
Sabah	1166	1981	3724	1953	2494	1365
Sarawak	1031	623	335	-	-	-
Sri Lanka	-	242	-	422	-	-
Thailand	158	-	-	-	-	-
Uruguay	-	-	-	-	-	1308
USA	-	-	506	-	2005	-
Venezuela	-	-	3577	-	-	-
OCC & S Amer.	390	449	-	-	-	-
OC Oceania	-	10	54	-	-	-
Other Countries	-	-	-	2180	332	682
TOTAL	28022	37520	42644	54323	36991	28884

211901 (41.01.510) and 2119921 (41.01 610) Crocodile Skins Undressed
TOTAL EXPORTS (includes Domestic Exports)

<u>Destination</u>	<u>1977</u> (kg)	<u>1978</u> (kg)	<u>1979</u> (kg)	<u>1980</u> (kg)	<u>1981</u> (kg)	<u>1982</u> (kg)
Australia	-	-	100	-	-	-
France	67353	50037	36065	69132	47256	23204
F.R. Germany	1020	-	-	-	-	-
Hong Kong	93	18	50	-	-	-
Italy	1055	-	-	-	-	-
Japan	18453	13718	20899	16193	24125	18613
Mexico	-	-	-	-	1125	-
New Zealand	-	-	4	-	-	-
Spain	-	-	-	-	-	340
Switzerland	-	-	-	1060	-	-
Thailand	108	-	663	5587	2247	1708
UK	283	-	-	-	-	-
USA	-	-	4	-	-	200
TOTAL	88364	63773	57785	92085	74760	44090

Table 22: SINGAPORE, cont.

211901 (41.01.510) and 2119921 (41.01 610) Crocodile Skins Undressed
DOMESTIC EXPORTS (included in Total Exports)

<u>Destination</u>	<u>1977</u> (kg)	<u>1978</u> (kg)	<u>1979</u> (kg)	<u>1980</u> (kg)	<u>1981</u> (kg)	<u>1982</u> (kg)
Australia	-	-	100	-	-	-
France	3970	480	-	-	-	-
F.R. Germany	150	-	-	-	-	-
Hong Kong	88	18	50	-	-	-
Japan	589	-	901	1525	1684	582
New Zealand	-	-	4	-	-	-
Thailand	108	-	663	5587	2247	1708
USA	-	-	4	-	-	-
TOTAL	4905	498	1722	7112	3934	2315

6116911 (41.05 110) Crocodile and Alligator Skin Leather Undressed.

	<u>1979</u> (kg)	<u>1980</u> (kg)	<u>1981</u> (kg)	<u>1982</u> (kg)
IMPORTS				
<u>Origin</u>				
Colombia	1155	2110	290	255
Hong Kong	-	-	-	90
Japan	255	350	-	-
Nigeria	54	-	-	-
Paraguay	435	-	-	-
Sri Lanka	-	-	-	1000
OCC & S Amer	9	-	-	-
Other Countries	-	-	-	681
TOTAL	1908	2460	290	2026
TOTAL EXPORTS				
Austria	-	-	92	-
Thailand	90	-	-	-
USA	48	-	-	-
TOTAL	138	11	242 (sic)	450

DOMESTIC EXPORTS (included in Total Exports)

Austria	-	-	92	-
Thailand	90	-	-	-
TOTAL	90	11	242	450

Table 22: SINGAPORE, cont.

6116912 (41.05 120) Crocodile and Alligator Skin Leather Dressed

	<u>1979</u> (kg)	<u>1980</u> (kg)	<u>1981</u> (kg)	<u>1982</u> (kg)
IMPORTS				
<u>Origin</u>				
Colombia	747	1002	-	-
France	158	-	47	232
F.R. Germany	107	-	-	-
Hong Kong	-	-	172	-
Italy	1029	-	-	-
Japan	1192	87	-	564
Nigeria	38	-	-	-
Panama	320	-	-	-
Paraguay	1126	-	-	-
Sri Lanka	-	-	-	-
Thailand	279	-	-	-
USA	-	309	100	-
OCC & S Amer	183	-	-	-
Other Countries	-	383	-	-
TOTAL	5179	1780	491 (sic)	812 (sic)

6116912 Crocodile and Alligator Skin Leather Dressed

	<u>1979</u> (kg)	<u>1980</u> (kg)	<u>1981</u> (kg)	<u>1982</u> (kg)
TOTAL EXPORTS (includes Domestic Exports)				
<u>Destination</u>				
Hong Kong	732	120	299	-
Japan	347	-	63	-
Spain	142	-	-	-
Taiwan	28	-	112	-
Thailand	663	-	-	-
TOTAL	1911	365	493	26

DOMESTIC EXPORTS (included in Total Exports)

Hong Kong	338	120	299	-
Japan	52	-	63	-
Taiwan	28	-	112	-
Thailand	663	-	-	-
TOTAL	1080	365	493	7

Source: Singapore Trade Statistics Imports and Exports. Department of Statistics, Singapore.

Table 23. SOMALIA Customs statistics.

211 92 Crocodile Skins

EXPORTS

Destination	<u>1977</u> (kg)	<u>1978</u> (kg)	<u>1979</u> (kg)
Italy	10	100	1432
TOTAL	10	100	1432

Table 24. SUDAN Customs statistics.

2119040 Crocodile Skins, Salted

EXPORTS	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981*</u>	<u>1982</u>
<u>Destination</u>	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)
A.R. Egypt	-	-	-	-	-	400
France	14003	13783	5000	-	-	1000
Switzerland	19014	18649	11150	-	-	-
UK	-	-	-	-	-	6950
TOTAL	33017	32432	16150	-	-	8350

2119050 Crocodile Skins, Air-dried

EXPORTS	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981*</u>	<u>1982</u>
<u>Destination</u>	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)
France	-	2150	1845	3145	-	10965
Saudi Arabia	-	-	-	-	-	23940
Switzerland	-	3500	1100	-	-	-
TOTAL	-	5650	2945	3145	-	34905

2119060 Crocodile Skins, Pickled

EXPORTS	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981*</u>	<u>1982</u>
<u>Destination</u>	(kg)	(kg)	(kg)	(kg)	(kg)	(kg)
France	-	-	-	-	-	1300
TOTAL	-	-	-	-	-	1300

* No data available for 1981

Source: The Democratic Republic of the Sudan. Foreign Trade Statistics, Ministry of Finance and Economic Planning, Department of Statistics.

Table 25. THAILAND Customs statistics.

41.01 12 Raw Crocodile Skins

IMPORTS	<u>1977</u> (kg)	<u>1978</u> (kg)	<u>1979</u> (kg)	<u>1980</u> (kg)	<u>1981</u> (kg)	<u>1982</u> (kg)	<u>1983</u> (kg)
<u>Origin</u>							
Singapore	-	-	-	1975	817	2422	3956
USA	-	-	-	-	540	-	-
TOTAL	n/l	n/l	n/l	1975	1357	2422	3956
EXPORTS							
<u>Destination</u>							
France	12780	4140	-	-	2427	-	-
F.R.Germany	17	-	-	-	-	-	-
Japan	-	4104	5365	4463	2885	1265	-
Singapore	198	-	-	-	-	-	-
Taiwan	360	-	-	-	-	-	-
USA	264	-	-	-	5	-	-
TOTAL	13619	8244	5365	4463	5317	1265	n/l

41.05 12 Crocodile Leather Tawed, Dyed, Designed

IMPORTS							
<u>Origin</u>							
Italy	-	-	15	103	-	-	-
Singapore	2031	1003	994	1067	205	62	45
South Africa	-	-	285	78	-	-	-
USA	-	-	65	-	-	-	-
TOTAL	2031	1003	1359	1248	205	62	45

EXPORTS - no export data.

41.05 22 Crocodile Leather not Tawed, Dyed, Designed

IMPORTS							
<u>Origin</u>							
Colombia	-	-	87				
Panama	-	-	70				
Singapore	418	149	14				
TOTAL	418	149	171	n/l	n/l	n/l	n/l
EXPORTS							
<u>Destination</u>							
Italy	-	-	-	-	-	-	97
Malaysia	-	20	-	-	-	-	-
TOTAL	n/l	20	n/l	n/l	n/l	n/l	97

n/l = not listed

Source: Foreign Statistics of Thailand, Department of Customs, Bangkok.

Table 26. Minimum gross and net trade volume of C. acutus skins.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
<u>1977</u>				
France	326	924	-	598
F.R.Germany	351	326	25	-
Switzerland	573	-	573	-
TOTAL	-	1250	-	598
<u>1978</u>				
Austria	657	-	657	-
Denmark	15	-	15	-
France	499	215	284	-
F.R. Germany	939	-	939	-
Italy	-	1748	-	1748
Panama	-	342	-	342
Papua New Guinea	-	5	-	5
Switzerland	250	-	250	-
Asia	-	50	-	50
TOTAL	-	2360	-	2145
<u>1979</u>				
Austria	157	-	157	-
France	-	886	-	886
F.R.Germany	2335	-	2335	-
Italy	-	2502	-	2502
-	-	323 cm	-	323 cm
Panama	-	200	-	200
Switzerland	896	-	896	-
-	323 cm	-	323 cm	-
Venezuela	200	-	200	-
TOTAL		3588		3588
<u>1980</u>				
Austria	78	-	78	-
Belgium	27	-	27	-
Denmark	1561	-	1561	-
F.R.Germany	963	94	869	-
France	2298	-	2298	-
Honduras	-	2	-	2
Italy	32279	7572	24707	-
Japan	152	-	152	-
Paraguay	-	29210	-	29210
Spain	79	3073	-	2994
Switzerland	2513	1	2512	-
USA	2	-	2	-
TOTAL		39952		32206

World Trade

Table 26: C. acutus, cont.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
<u>1981</u>				
Austria	11	-	11	-
Belgium	8	-	8	-
France	62	-	62	-
F.R.Germany	1052	289	763	-
Italy	7590	3599	3991	-
Mexico	-	1	-	1
Panama	-	2812	-	2812
Paraguay	-	2991	-	2991
Switzerland	2467	1500	967	-
USA	2	-	2	-
TOTAL		11192		5804
<u>1982</u>				
Austria	5	-	5	-
Canada	1	-	1	-
France	-	110	-	110
Italy	-	309	-	309
Mexico	-	1	-	1
Switzerland	414	-	414	-
UK	-	1	-	309
USA	1	-	1	-
TOTAL		421		421
<u>1983</u>				
Belgium	78	-	78	-
Canada	-	1	-	1
France	-	216	-	216
F.R.Germany	60	-	60	-
Italy	-	373	-	373
Mexico	-	1	-	1
Switzerland	451	-	451	-
UK	8	-	8	-
USA	2	-	2	-
Unknown	-	8	-	8
TOTAL		599		599
<u>1984</u>				
Switzerland	105	-	105	-
Italy	105	-	105	-
Mexico	-	1	-	1
USA	1	-	1	-
TOTAL	106	106	106	106

Source: CITES annual reports.

NB: Totals reflect only trade reported by number of skins.

Table 27. Minimum gross and net trade volume of C. cataphractus skins.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
<u>1979</u>				
France	1159 cm	3736	1159 cm	3736
Italy	3736	<u>1159</u> cm	3736	<u>1159</u> cm
TOTAL		3736		3736
<u>1980</u>				
Congo	-	1536	-	1536
France	-	9197	-	9197
Gabon	-	523	-	523
Italy	11256	50	11206	
Japan	50	<u>-</u>	50	<u>-</u>
TOTAL		11306		11256
<u>1981</u>				
Denmark	208	-	208	
France	10	8150	-	8140
Italy	8198	218	7980	
Mexico	4	-	4	
Switzerland	-	<u>52</u>	-	<u>52</u>
TOTAL		8420		8192
<u>1982</u>				
France	39	9065	-	9026
F.R.Germany	39	39		
Gabon	-	1	-	1
Italy	8936	-	8936	
Spain	90	-	90	
Switzerland	1	<u>-</u>	1	<u>-</u>
TOTAL		9105		9027
<u>1983</u>				
Austria	33	-	33	
Congo	-	4870	-	4870
France	4967	7679	-	2712
F.R.Germany	-	33	-	33
Italy	7679	<u>97</u>	7582	<u>-</u>
TOTAL		12679		7615
<u>1984</u>				
Congo	-	2030	-	2030
France	2030	-	2030	2030
TOTAL		2030		2030

Source: CITES annual reports.

NB: Totals reflect only trade reported by number of skins.

Table 28. Minimum gross and net trade volume of C. niloticus skins.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
<u>1977</u>				
Canada	8	-	8	
France	15	1262	-	1247
Kenya	-	6	-	6
Madagascar	-	1	-	1
Switzerland	1262	12	1250	
UK	-	2	-	2
Zambia	-	<u>2</u>	-	<u>2</u>
TOTAL		1285		1258
<u>1978</u>				
Botswana	-	1	-	1
France	174	-	174	
Spain	1	-	1	
Switzerland	-	<u>174</u>	-	<u>174</u>
TOTAL		175		175
<u>1979</u>				
Botswana	-	1158	-	1158
France	4450	1931	2519	
F.R.Germany	1161	-	1161	
Italy	1931	4457	-	2526
Madagascar	-	1	-	1
Mexico	1	-	1	
Nigeria	-	1	-	1
South Africa	2	3	-	1
Swaziland	-	1	-	1
Switzerland	1	-	1	
UK	24	-	24	
USA	2	16	-	14
Zambia	-	<u>4</u>	-	<u>4</u>
TOTAL		7572		3706
<u>1980</u>				
Austria	85	-	85	
Bermuda	18	-	18	
Brazil	1	-	1	
Cameroon	20	-	20	
Canada	46	-	46	
Colombia	1	-	1	
Denmark	5	-	5	
Finland	11	-	11	
France	863	11608	-	10745
F.R.Germany	34	6	28	
Hong Kong	258	-	258	
Italy	21450	950	20500	

Table 28: C. niloticus, cont.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
<u>1980 cont.</u>				
Japan	395	-	395	
Netherlands	66	-	66	
Senegal	8	-	8	
Somalia	-	1266	-	1266
South Africa	-	2	-	2
Spain	404	-	404	
Sudan	-	3635	-	3635
Switzerland	101	4975	-	4874
Thailand	6	-	6	
Togo	11	-	11	
UK	68	1637	-	1569
USA	14	-	14	
Unknown	217	-	217	
Zimbabwe	-	<u>3</u>	-	<u>3</u>
TOTAL		24082		22094
<u>1981</u>				
Botswana	-	3	-	3
Canada	1	-	1	
France	3586	10390	-	6804
	1396 cm ²	-	1396 cm ²	
F.R.Germany	342	-	342	
Hong Kong	92	-	92	
Italy	24451	3766	20685	
	-	1396 cm ²	-	1396 cm ²
Japan	353	-	353	
Kenya	-	1	-	1
Liberia	-	230	-	230
Madagascar	-	4	-	4
Nigeria	-	10304	-	10304
Singapore	701	-	701	
Somalia	-	847	-	847
South Africa	1	403	-	402
Spain	76	-	76	
Sweden	1	-	1	
Switzerland	396	3573	-	3177
Tanzania	-	3	-	3
UK	1	187	-	186
USA	2	-	2	
Zambia	-	2	-	2
Zimbabwe	-	<u>290</u>	-	<u>290</u>
TOTAL		30003		22253

World Trade

Table 28: *C. niloticus*, cont.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
1982				
Australia	2	-	2	
Austria	286	1	285	
Botswana	2	-	2	
Canada	2	-	2	
Egypt	-	2	-	2
France	5044	21874	-	16830
	20304 cm ²	-	20304 cm ²	
F.R.Germany	1254	149	1105	
Italy	19497	1811	17686	
	-	20543 cm ²	-	20543 cm ²
Liberia	-	418	-	418
Madagascar	-	20	-	20
Reunion	2	-	2	
Singapore	992	-	992	
South Africa	9	2	7	
Spain	1	-	1	
Switzerland	2	1	1	
Tanzania	-	5	-	5
Togo	-	2817	-	2817
UK	2	-	2	
	239 cm ²	-	239 cm ²	
USA	3	-	3	
Unknown	13	-	13	
Zimbabwe	2	9	-	7
TOTAL		27111		20101
1983				
Australia	49	-	49	
Austria	481	-	481	
Belgium	93	-	93	
Botswana	-	3	-	3
Denmark	1	-	1	
France	22677	5596	17081	
	53 m	-	53 m	
F.R.Germany	937	67	870	
Hong Kong	1	-	1	
Italy	10412	162	10250	
	-	53 m	-	53 m
Japan	10	-	10	
Liberia	-	521	-	521
Madagascar	-	32	-	32
Malawi	-	341	-	341
Mali	-	804	-	804
Nigeria	-	9	-	9
Singapore	10	150	-	140
Somalia	-	1	-	1
South Africa	60	-	60	
Spain	30	7998	-	7968
Sudan	-	15422	-	15422
Sweden	1	-	1	

Table 28: C. niloticus, cont.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
<u>1983 cont.</u>				
Switzerland	8	-	8	
Tanzania	-	15	-	15
Togo	-	3560	-	3560
UK	27	-	27	
USA	11	-	11	
Zambia	-	167	-	167
Zimbabwe	71	<u>31</u>	40	<u>-</u>
TOTAL		34879		28983
<u>1984</u>				
Australia	3	-	3	
Austria	57	-	57	
Belgium	159	-	159	
Canada	85	-	85	
	74 cm	-	74 cm	
Chad	469	-	469	
Ethiopia	-	1	-	1
France	3926	293	3633	
Germany, FR	15	-	15	
Hong Kong	371	-	371	
Israel	1	-	1	
Italy	2	396	-	394
Japan	115	-	115	
Lebanon	9	-	9	
Liberia	-	320	-	320
Madagascar	-	5	-	5
Malawi	-	415	-	415
Mexico	3	-	3	
Netherlands	2	-	2	
Nigeria	-	1	-	1
Reunion	1	-	1	
South Africa	375	32	343	
Spain	5	859	-	854
Switzerland	257	1	256	
Syria	51	-	51	
Tanzania	-	7	-	7
UK	101	32	69	
	-	74 cm	-	74 cm
USA	134	-	134	
Zambia	-	688	-	688
Zimbabwe	27	3457	-	3430
Country unknown	416	3	413	
TOTAL		6510		6115

Source: CITES annual reports.

NB: Totals reflect only trade reported by number of skins.

Table 29. Minimum gross and net trade volume of C. novaeguineae skins.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
<u>1977</u>				
Australia	1	-	1	
Austria	154	-	154	
France	6989	9805	-	2816
F.R.Germany	4049	186	3863	
Italy	52	-	52	
Japan	7041	-	7041	
Mexico	12	-	12	
Papua New Guinea	-	14436	-	14436
Switzerland	5686	467	5219	
UK	478	-	478	
USA	438	6	432	-
TOTAL		24900		17252
<u>1978</u>				
Australia	2	-	2	
Denmark	67	-	67	
Fiji	1	-	1	
France	13798	25077	-	11279
F.R.Germany	703	210	493	
Hong Kong	100	50	50	
Italy	2660	-	2660	
Japan	6342	-	6342	
Mexico	91	-	91	
Papua New Guinea	-	33586	-	33586
Singapore	13661	-	13661	
Spain	6	-	6	
Switzerland	21414	41	21373	
UK	207	15	192	
USA	127	200	-	73
TOTAL		59179		44938
<u>1979</u>				
Australia	1	-	1	
Austria	25	-	25	
Denmark	14	-	14	
France	16975	10626	6349	
F.R.Germany	2247	53	2194	
Hong Kong	150	-	150	
Indonesia	1	-	1	
Italy	2628	9	2619	
Japan	13078	-	13078	
New Zealand	2	-	2	
Papua New Guinea	-	41160	-	41160
Singapore	11115	150	10965	
Switzerland	5138	-	5138	
UK	93	979	-	886
USA	1600	90	1510	-
TOTAL		53067		42046

Table 29: C. novaeguineae, cont.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
<u>1980</u>				
Austria	383	-	383	
Belgium	37	-	37	
Canada	1332	-	1332	
Denmark	63	-	63	
France	776	21414	-	20638
F.R.Germany	1701	117	1584	
Greece	37 pairs	-	37 pairs	
Hong Kong	281	2	279	
Israel	11	-	11	
Italy	5479	326	5153	
Japan	5098	-	5098	
	1837 inches	-	1837 inches	
Kuwait	11	-	11	
Lebanon	367	-	367	
Madagascar	-	6	-	6
New Zealand	84	-	84	
Papua New Guinea	-	2928	-	2928
Singapore	-	1265	-	1265
	-	1837 inches	-	1837 inches
South Africa	12	-	12	
South Korea	10	-	10	
Spain	88	-	88	
Switzerland	5745	1052	4693	
Thailand	-	28	-	28
UK	39	2710	-	2671
USA	8341	10	8331	
	-	37 pairs	-	37 pairs
TOTAL		29858		29536
<u>1981</u>				
Australia	2	-	2	
France	170	31192	-	31022
F.R.Germany	489	203	286	
	-	211 kg	-	211 kg
Hong Kong	262	-	262	
Italy	12277	123	12154	
	211 kg	-	211 kg	
	-	414 cm ²	-	414 cm ²
Japan	493	-	493	
Mexico	3	2	1	
Papua New Guinea	-	2	-	2
Singapore	-	262	-	262
Switzerland	4767	104	4663	
UK	-	50	-	50
USA	13428	3	13425	
	414 cm ²	-	414 cm ²	-
TOTAL		31941		31336

Table 29: C. novaeguineae, cont.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
<u>1982</u>				
Australia	2	-	2	
Austria	66	-	66	
France	6	13392	-	13386
F.R.Germany	86	-	86	
Hong Kong	34	-	34	
Indonesia	-	905	-	905
Italy	5134	32	5102	
Japan	1681	1	1680	
Papua New Guinea	-	2	-	2
Singapore	905	31	874	
Switzerland	4088	-	4088	
UK	4	1	3	
USA	2364	6	2358	-
TOTAL		14370		14293
<u>1983</u>				
Australia	21	-	21	
Austria	210	-	210	
Bahamas	2	-	2	
Belgium	24	-	24	
German Dem. Rep.	28	-	28	
F.R. Germany	958	18	940	
France	4924	8928	-	4004
	-	201 kg	-	201 kg
Greece	3	-	3	
Hong Kong	2013	3	2010	
Indonesia	-	1980	-	1980
Iceland	110	-	110	
Italy	5157	437	4720	
	1 kg	-	1 kg	
	-	172 ft ²	-	172 ft ²
Japan	16030	115	15915	
	79882 inches	-	79882 inches	
	1529 kg	-	1529 kg	
Japan	-	10 m	-	10 m
Korea	10 m	-	10 m	
Lebanon	12	-	12	
Mexico	6 lbs	-	6 lbs	
Papua New Guinea	-	17014	-	17014
	-	79882 inches	-	79882 inches
	-	1529 kg	-	1529 kg
Saudi Arabia	-	82	-	82
Singapore	2061	5901	-	3840
Sweden	10	-	10	
Switzerland	2289	-	2289	
	172 ft ²	-	172 ft ²	
United Arab Emirates	12	-	12	
UK	54	541	-	487
USA	938	1	937	
	200 kg	-	200 kg	
	-	6 lbs	-	6 lbs
TOTAL		34938		27325

Table 29: *C. novaeguineae*, cont.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
<u>1984</u>				
Austria	107	-	107	
France	12164	3301	8863	
Germany, FR	1	55	-	54
Hong Kong	169	-	169	
	2752 cm	-	2752 cm	
Indonesia	-	225	-	225
Italy	654	1436	-	782
Japan	16964	536	16428	
	313 kg	7559 cm	313 kg	7339 cm
Papua New Guinea	39 cm	21321	39 cm	21321
Singapore	225	6999	-	6774
	4536 cm	313 kg	4536 cm	313 kg
Spain	3	-	3	
Switzerland	3112	658	2454	
	73 cm	-	73 cm	
Taiwan	4	-	4	
USA	1136	8	1128	
	159 cm	-	159 cm	
TOTAL		34539		29156

Source: CITES annual reports.

NB: Totals only reflect trade reported by number of skins.

Table 30. Minimum gross and net trade volume of Crocodylus porosus skins.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
<u>1977</u>				
Australia	1	-	1	
France	1098	6871	-	5773
F.R.Germany	6517	7	6510	
Italy	706	2775	-	2069
Japan	1296	-	1296	
Papua New Guinea	-	6089	-	6089
Singapore	3236	367	2869	
Switzerland	2667	-	2667	
UK	113	-	113	
USA	475	-	475	-
TOTAL		16109		13931
<u>1978</u>				
Australia	6	-	6	
Austria	137	-	137	
Denmark	4	-	4	
France	3792	3745	47	
F.R.Germany	3522	100	3422	
Indonesia	-	391	-	391
Italy	1370	2867	-	1497
Japan	1459	-	1459	
Madagascar	-	534	-	534
Papua New Guinea	-	9119	-	9119
Singapore	3935	318	3617	
Switzerland	2146	-	2146	
UK	694	-	694	
USA	9	-	9	-
TOTAL		17074		11541
<u>1979</u>				
Australia	2	-	2	
Austria	6	-	6	
Canada	5	-	5	
Denmark	17	-	17	
France	3142	4905	-	1763
F.R.Germany	1440	1	1439	
Hong Kong	1371	-	1371	
Indonesia	1	-	1	
Italy	1991	1314	677	
Japan	1810	-	1810	
New Zealand	1	-	1	
Papua New Guinea	-	7425	-	7425
Singapore	2454	1370	1084	
Switzerland	2753	-	2753	
UK	44	22	22	-
TOTAL		15037		9188

Table 30: C. porosus, cont.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
<u>1980</u>				
Australia	-	35	-	35
Austria	17	-	17	
France	10	3360	-	3350
F.R.Germany	248	-	248	
Hong Kong	35	-	35	
	400 inches	-	400 inches	
Italy	1138	248	890	
Japan	73	-	73	
Papua New Guinea	-	1	-	1
Singapore	10	3	7	
	400 inches	-	400 inches	
South Korea	9	-	9	
Spain	20	-	20	
Switzerland	2003	-	2003	
UK	124	35	89	
USA	4	<u>9</u>	-	<u>5</u>
TOTAL		3691		3391
<u>1981</u>				
Austria	181	-	181	
France	283	4614	-	4331
	66 kg	-	66 kg	
F.R.Germany	1132	-	1132	
Hong Kong	738	-	738	
Indonesia	-	200	-	200
Italy	3457	1116	2341	
	66 kg	-	66 kg	
Malaysia	246	186	60	
Papua New Guinea	1	-	1	
Singapore	200	743	-	543
Switzerland	830	279	551	
UK	130	-	130	
USA	4	4		
Unknown	186	<u>246</u>	-	<u>60</u>
TOTAL		7388		5134
<u>1982</u>				
Austria	155	-	155	
France	-	2017	-	2017
F.R.Germany	501	-	501	
Indonesia	-	100	-	100
Italy	544	121	423	
Japan	109	-	109	
Singapore	100	-	100	
Switzerland	772	-	772	
UK	66	<u>9</u>	57	<u>-</u>
TOTAL		2247		2117

World Trade

Table 30: C. porosus, cont.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
<u>1983</u>				
Australia	33	-	33	
Austria	287	-	287	
Canada	1	-	1	
F.R. Germany	501	11	490	
France	1750	3346	-	1596
Indonesia	-	300	-	300
Italy	398	9	389	
Japan	2050	-	2050	
Korea	25	-	25	
Malaysia	-	56	-	56
Mexico	9 lbs	-	9 lbs	
Papua New Guinea	-	3446	-	3446
Singapore	371	-	371	
Switzerland	1717	-	1717	
Turkey	1	-	1	
UK	35	1	34	
USA	-	9 lbs	-	9 lbs
TOTAL		7169		5398
<u>1984</u>				
Austria	240	-	240	
Canada	-	3	-	3
France	2687	1295	1392	
1437 cm	-	1437 cm		
Germany, FR	31	3	28	
Hong Kong	1	-	1	
Indonesia	-	200	-	200
Italy	-	98	-	98
Japan	2648	180	2468	
1510 cm	-	-	1510 cm	
Papua New Guinea	70	5152	-	5082
Singapore	200	-	200	
Switzerland	1044	-	1044	
73 cm	-	73 cm		
USA	10	-	10	
TOTAL		6931		5358

Source: CITES annual reports.

NB: Totals reflect only trade reported by number of skins.

Table 31. Minimum gross and net trade volume of Alligator mississippiensis skins.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
<u>1980</u>				
France	8990	4093	4897	
	-	57 m	-	57 m
UK	4	-	4	
USA	4093	8994	-	4901
	57 m	-	57 m	-
TOTAL		13087		4901
<u>1981</u>				
France	18180	9407	8773	
F.R.Germany	5	-	5	
Hong Kong	38	-	38	
	25 lbs	-	25 lbs	
Italy	9005	5021	3984	
Japan	1984	-	1984	
Mexico	8	-	8	
UK	1220	9407	8773	
	8000 ft ²	-	8000 ft ²	
USA	13505	29298	-	15793
	-	8000 ft ²	-	8000 ft ²
TOTAL		43945		15793
<u>1982</u>				
Austria	76	-	76	
	-	5 lbs	-	5 lbs
Canada	2	-	2	
France	14156	9292	4864	
F.R.Germany	702	70	632	
Hong Kong	54	-	54	
	65 kg	-	65 kg	
Italy	9624	4147	5477	
Japan	5355	15	5340	
	4582 ft	-	4582 ft	
New Zealand	1	-	1	
Switzerland	309	-	309	
UK	266	-	266	
USA	8814	25835	-	17021
	-	4582 ft	-	4582 ft
	-	65 kg	-	65 kg
	5 lbs	-	5 lbs	-
TOTAL		39359		17021

Table 31: A. mississippiensis, cont.

COUNTRY	GROSS IMPORTS	GROSS EXPORTS	NET IMPORTS	NET EXPORTS
<u>1983</u>				
Australia	1	-	1	
Austria	100	-	100	
Belgium	8	-	8	
Canada	23	-	23	
Denmark	7	-	7	
France	10736	12309	-	1573
F.R.Germany	243	41	202	
Hong Kong	247	120	127	
	-	50 kg	-	50 kg
Italy	9407	3765	5642	
Japan	10463	132	10331	
	50 kg	-	50 kg	
Mexico	10 kg	-	10 kg	
	130 lbs	-	130 lbs	
Netherlands	-	1	-	1
Paraguay	-	2000	-	2000
Singapore	-	490	-	490
South Korea	20	-	20	
Spain	27	69	-	42
Switzerland	367	-	367	
Uruguay	-	1	-	1
UK	85	-	85	
USA	7263	20069	-	12806
	-	130 lbs	-	130 lbs
TOTAL		38997		16913
<u>1984</u>				
Austria	105	-	105	
Canada	22	-	22	
France	9387	6899	2488	
Germany, FR	1	21	-	20
Greece	86 pairs	-	86 pairs	
Hong Kong	128	-	128	
	91 kg	-	91 kg	
Italy	5543	3612	1931	
Japan	7845	107	7738	
	75 kg	40 m	75 kg	40 m
Mexico	48	-	48	
	53 kg	-	53 kg	
Spain	104	-	104	
Switzerland	484	250	234	
UK	84	-	84	
USA	8571	21519	-	12948
	40 m	219 kg	40 m	219 kg
TOTAL		32388		12968

Source: CITES annual reports

NB: Totals reflect only trade reported by number of skins.

Exports to Europe of Crocodylus niloticus skins from Sudan

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INTRODUCTION

This report was produced by the Wildlife Trade Monitoring Unit of IUCN's Conservation Monitoring Centre under contract to the International Alligator/Crocodile Trade Study (IACTS). The objective was to document the trade in Nile Crocodile Crocodylus niloticus skins between Europe and Sudan based on an analysis of the data supplied by the principle traders involved.

The Nile Crocodile Crocodylus niloticus occurs throughout most of Africa south of the Sahara, and northwards along the Nile as far as Lake Nasser (Groombridge, 1982). The species is considered to be vulnerable, having declined owing to commercial exploitation and loss of habitat, although substantial populations remain in several countries (Pooley, 1982). No quantitative surveys have been carried out in Sudan, but the species is considered to be abundant and stable in most of the country, although marked population declines have been reported in the Upper Nile between Kosti and Amara. South of Juba, crocodiles are considered common, but declining, partially as a result of droughts (Tello, 1985).

The species was listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) from its inception in 1975. In 1983, the population in Zimbabwe was transferred to Appendix II, in accordance with CITES Resolution Conf. 3.15 relating to ranching operations. In 1985, the populations in nine additional African countries were transferred to Appendix II, subject to annual export quotas; these are given in Table 1. Reservations to trade in C. niloticus are currently held by Botswana, Sudan, Zambia and Zimbabwe, although the delegation of Sudan announced the 5th meeting of the Conference of the Parties to CITES in Buenos Aires in 1985 that the Sudanese Government intended to withdraw its reservation. Reservations were also formerly held by Italy and France, but were withdrawn on 1 January 1984 and 10 December 1984, respectively, in compliance with EEC Regulation 3626/82.

Table 1. Quotas of C. niloticus skins which may be exported from nine African countries where the populations have been transferred to Appendix II.

Country	Estimated population of <u>C. niloticus</u>	Quota of animals
Cameroon	5000	20
Congo	40000	1000
Kenya	40000	150
Madagascar	30000	1000
Malawi	28300	500
Mozambique	202000	1000
Sudan	250000	5000
Tanzania	74000	1000
Zambia	150000	2000

In spite of the restrictions demanded by CITES, there has been considerable trade in C. niloticus. An analysis of CITES Annual Reports (Dixon and Barzdo, this volume) showed that the minimum net trade fluctuated between 20 000 and 30 000 from 1980 to 1983, before falling to 6120 in 1984 (Fig. 1). The majority of these skins were imported to Italy and France, under their reservations, and the withdrawal of those reservations probably accounts for the marked drop in trade in 1984.

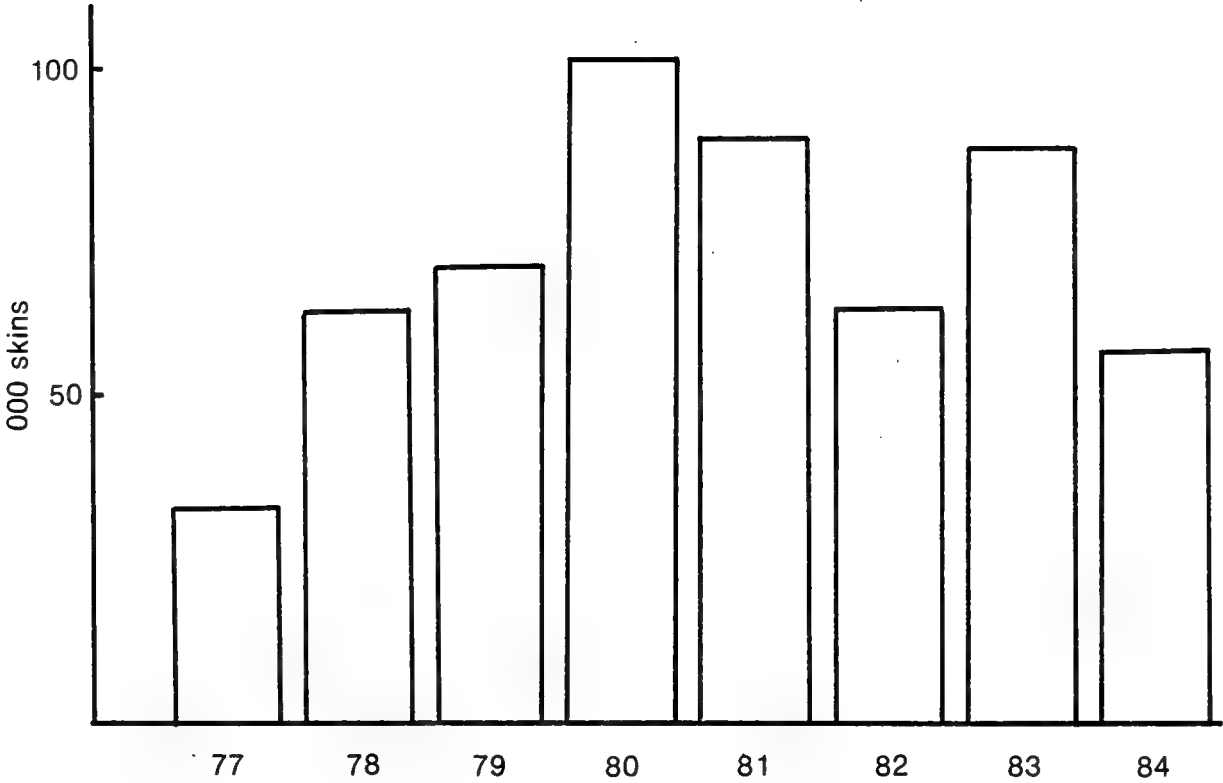


Figure 1. Minimum net trade in skins of Crocodylus niloticus reported to CITES.

Investigation of Sudan's trade in crocodile skins is important for several reasons. It has been a major source of skins and, in 1983, accounted for over half of the skins reported to CITES (Fig. 1). It was allocated the largest quota of all the African countries, and was considered to have the largest wild population of crocodiles (Table 1). There is a very high level of national utilization, and it has been estimated that 20 000 to 30 000 crocodiles are hunted annually in the country. Most of the hunting is uncontrolled and some is illegal, and the poachers are reported to be well organised and well armed, having killed several anti-poaching staff in recent years. There is also thought to be a very high rate of illegal export of crocodile skins, possibly between 30 000 and 50 000 a year, mainly to Egypt and Saudi Arabia. Some of these skins may be from indigenous crocodiles but the majority are thought to have been illegally imported to Sudan from Zaire, Congo, Nigeria, Central African Republic and Chad. These imported skins are mostly of Osteolaemus tetraspis, with lesser quantities of C. niloticus and Crocodylus cataphractus (Tello, 1985). Medicinal by-products, such as dried penes, have been featuring increasingly in the export trade. Control of imports and exports is reported to be almost impossible, facing similar problems to the control of poaching, and it is aggravated by the long land borders with eight other countries. Dealers within the country reported that they have been selling more crocodile skins in the years since Sudan ratified CITES in 1982, as the resulting restrictions on the legal trade had opened the doors for illegal trade to Egypt (Tello, 1985). Tello reported that when he suggested an export quota of 5000 skins, the Sudanese CITES Management Authority requested that it should be raised to 10 000 to allow export of the enormous number of skins which it claimed were stockpiled in the dealers' stores. In the event, the lower quota was accepted at Buenos Aires. The trade in crocodile skins is of substantial importance to the rural economy of Sudan (Tello, 1985).

This report uses three sources of data to analyse export of C. niloticus skins from Sudan to Europe. The Annual Reports of the Parties to CITES, Customs export figures from Sudan, and data supplied by European importers of skins.

METHODS

Annual Reports of the Parties to CITES for the years 1977 to 1984 were analysed by the methods described in Dixon and Barzdo (this volume).

Customs export figures were examined in the form of the Foreign Trade Statistics, published by the Department of Statistics, Ministry of Finance and Economic Planning, Democratic Republic of Sudan. These data were only available for the years 1977, 1978, 1979, 1980 and 1982. They specify exports of Crocodile skins, salted (Category 2119040), Crocodile skins, air-dried (Category 211050) and Crocodile skins, pickled (Category 2119060).

Interviews were carried out with three reptile skin dealers involved with the trade in C. niloticus skins from Sudan. The companies represented were Exclesior Hides and Skins Ltd, Gordon Choisy and the Tanneries des Cuirs d'Indochinie et de Madagascar. The first two of these companies contributed data on the number and size of skins imported since 1978.

CITES DATA

CITES data from 1978 to 1984 are incomplete. Sudan did not effectively become a Party to CITES until 1983, and did not submit an annual report until 1985; so the trade in previous years must be inferred from the imports and re-exports reported by other Parties. This will give an under-estimation of the true volume of the trade particularly as France, one of the two main importers of Sudanese crocodile skins, did not report imports of Appendix II species before 1983. The quality of the reporting in the early years of the

Sudan Exports

Convention (before 1980) was generally poorer, partially because there were fewer Parties.

The minimum net trade in skins of C. niloticus throughout the world is shown in Fig. 1, together with the net trade in skins declared as having originated in Sudan. No skins of Sudanese origin were reported in trade in 1984 or before 1980. All the reported transactions involved either imports to or re-exports from Italy or France; these are shown in Table 2.

Table 2. All trade between 1978 and 1984 reported to CITES in skins of C. niloticus declared to have been exported by, or to have originated in Sudan.

Importer	Exporter	Quantity reported by Importer	Quantity reported by exporter
<u>1980</u>			
Italy	Sudan	3635	-
Italy	France	3885	-
<u>1981</u>			
F.R. Germany	Italy	114	-
France	Italy	837	-
France	Italy	1396 cm ²	-
Italy	Switzerland	3573	-
Italy	France	1117	2412
Italy	UK	187	-
<u>1982</u>			
France	Italy	1117	-
France	Italy	20304 cm ²	-
Italy	France	2817	3905
Unknown	Italy	13	-
<u>1983</u>			
France	Sudan	10000	-
Italy	Sudan	5422	-
Switzerland	Italy	6	-
F.R. Germany	Italy	26	-
Spain	France	27	-
Italy	Spain	498	-
Italy	France	632	599

CUSTOMS DATA

The Sudanese Customs export data are given in Table 3. All quantities are given in kilogrammes, but it was not possible to convert the bulk of these to numbers of skins as there is no indication of whether they were wet- or dry-salted.

The total volume of exports reported fluctuated markedly from year to year, amounting to 137 894 kg over the whole period. The bulk of these, 53 413 kg (39%), were exported to Switzerland, with a similar quantity to

France, 53 191 kg (39%). However, exports to Switzerland ceased after 1979 while those to France have continued at high levels. In 1982, 54% of the skins were exported to Saudi Arabia, with a substantial quantity to the UK and some to Egypt. It should be noted that the enormous illegal exports to Egypt and Saudi Arabia, discussed earlier, will not be represented in these Customs data.

Table 3. Exports of crocodile skins reported by Sudanese Customs. All quantities are in kg.

	1977	1978	1979	1980	1981*	1982
2119040 Crocodile Skins, Salted						
<u>Country of Consignment</u>						
A.R. Egypt	-	-	-	-		400
France	14003	13783	5000	-		1000
Switzerland	19014	18649	11150	-		-
UK	-	-	-	-		6950
TOTAL	33017	32432	16150	-		8350
2119050 Crocodile Skins, Air-dried						
<u>Country of Consignment</u>						
France	-	2150	1845	3145		10965
Saudi Arabia	-	-	-	-		23940
Switzerland	-	3500	1100	-		-
TOTAL	-	5650	2945	3145		34905
2119060 Crocodile Skins, Pickled						
<u>Country of Consignment</u>						
France	-	-	-	-		1300
TOTAL	-	-	-	-		1300
GRAND TOTAL	33017	34582	17250	3415		44555

* No data were available for 1981

Source: The Democratic Republic of the Sudan, Foreign Trade Statistics, Ministry of Finance and Economic Planning, Department of Statistics.

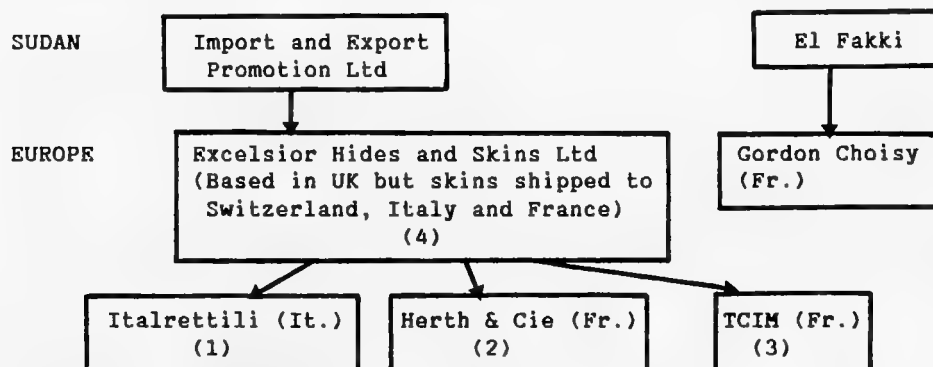
DEALERS' DATA

Since 1978, the number of dealers known to have been involved in the trade of Sudanese Nile Crocodile skins with Europe has been small. Two suppliers in Sudan, Import and Export Promotion Ltd, and El Fakki, Provided skins for the five European buyers: Overseas Leather Company Ltd, Excelsior Hides and Leathers Ltd, both UK-based companies, Herth & Cie, Tanneries des Cuirs d'Indochine et de Madagascar (TCIM), and Gordon Choisy, all in France,

Sudan Exports

and Italrettili in Italy. Although it must be remembered that the European dealers also trade amongst themselves and therefore the flow of skins within Europe may be somewhat convoluted, Fig. 2 shows the general trade pattern as it existed in 1980.

Fig. 2. Major European dealers involved in trading in skins of Crocodylus niloticus from Sudan.



Notes

1. Excelsior has not supplied Italrettili with skins since 1980. Italrettili has since been using stock-piled skins but is not known to be importing any new supplies from Sudan.
2. TCIM has not imported any skins since 1982 when the tariff was imposed (Roggwiller, pers. comm.).
3. Herth & Cie is currently in liquidation.
4. Excelsior Hides and Skins has not imported any skins since 1982.
5. Overseas Leather Company Ltd stopped importing Sudanese crocodile skins around 1975 (V. Margossian, pers. comm.).

In addition, the European dealers trade amongst themselves. For various reasons, largely stemming from the difficulties of obtaining skins (paperwork and limited supply) and the prohibitively high tariff imposed upon the export of crocodile skins by the Sudanese Government since 1982 (V. Margossian, pers. comm.) TCIM, Excelsior and Italrettili have not imported any Sudanese crocodile skins for at least a couple of years (V. Margossian, Roggwiller, pers. comm.). In addition, the withdrawal of reservations by Italy and France caused by EEC Regulation 3626/82 would also be expected to have reduced the volume of Nile Crocodile skins entering Europe. However, as a result of the transfer of the Sudanese population of Nile Crocodiles to Appendix II and a proposed reduction in the tariff by the Sudanese Government, both Excelsior and TCIM expressed the intention of resuming importing in early 1986 (Margossian, Roggwiller, pers. comm.).

Excelsior and Gordon Choisy have both provided data on the size and quantity of their skins obtained since 1978. These data are summarized below. As Gordon Choisy obtains its skins from El Fakki and Excelsior supplied the other companies, these data are not considered to overlap in any substantial way. Excelsior is based in the UK but imports the crocodile skins from Sudan into Italy, France, Spain and Switzerland where they are collected and then shipped on to the buyers.

Table 4: Number and size of Crocodylus niloticus skins imported by Excelsior from Sudan. Figures in brackets are the mean skin size within each size class.

Skin size (cm)	1978-79	1979-80	1980-81	1981-82
50+	1091 (64.5)	1257 (66.9)	1964 (66.3)	605 (66.1)
40-49	1278 (41.5)	994 (42.8)	1946 (43.2)	463 (43.6)
30-39	2751 (32.5)	2089 (32.2)	3959 (33.0)	713 (33.6)
25-29	1857 (26.0)	1588 (26.0)	2729 (26.5)	465 (26.6)
20-24	1947 (21.3)	1883 (21.1)	2892 (21.5)	544 (21.9)
15-19	1150 (17.0)	918 (17.0)	1461 (16.8)	227 (16.5)
10-14	230 (12.2)	258 (12.4)	261 (12.3)	17 (13.0)
Total	10304	8987	15212	3084

Source: V. Margossian

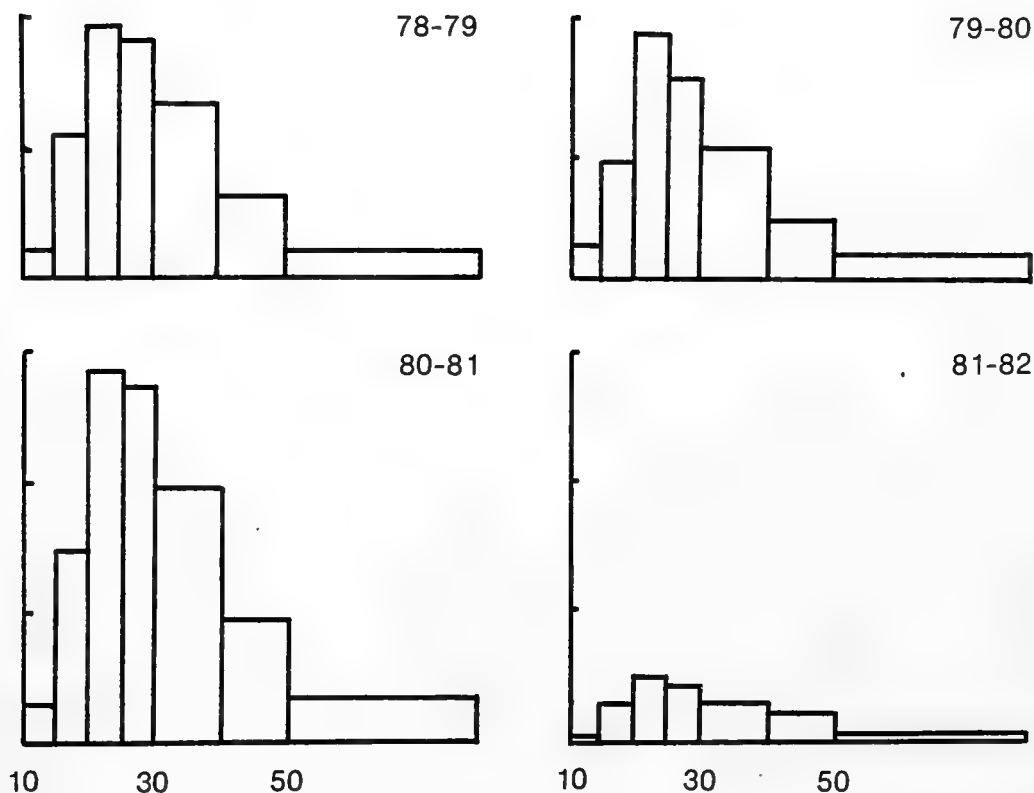


Figure 3. Size-frequency distribution of skins of Crocodylus niloticus imported by Excelsior. For the purposes of this figure, the "50+" size class was considered to be 50-80 cm.

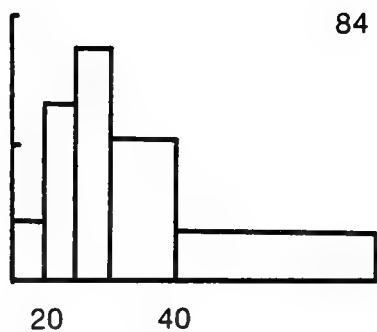
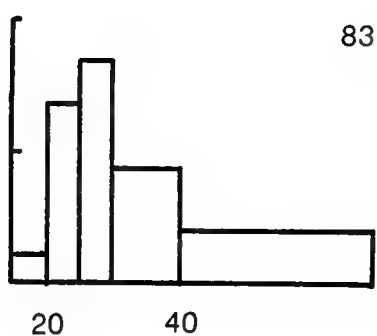
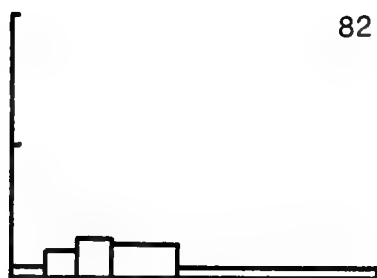
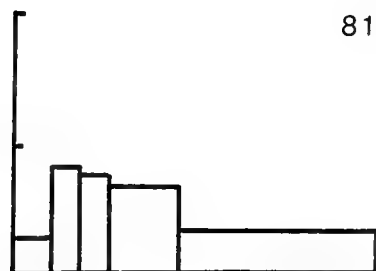
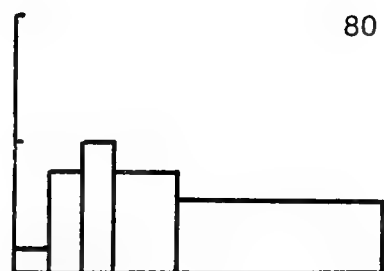


Figure 4. Size-frequency distribution of skins of Crocodylus niloticus imported by Gordon Choisy. For the purposes of this figure, the "40+" size class was considered to be 40-70 cm.

Table 5: Number and size of Crocodylus niloticus skins imported by Gordon Choisy from Sudan

Skin size (cm)	1978	1979	1980	1981	1982	1983	1984
40+			1673	1116	413	1235	1092
30-39			821	676	270	912	1119
25-29			517	391	155	864	882
20-24			404	410	117	708	697
15-19			87	166	44	133	207
Total	4400	2098	3502	2759	999	3852	3997

Source: P. Grawitz

Tables 4 and 5 give the annual total imports of the two firms. The size-frequency distributions of the skins imported are given in Figs 3 and 4. The sharp decline in volume recorded by Excelsior in 1981-82 was in response to the imposition of the Sudanese Government tariff (Margossian, pers. comm.). As the tariff was charged on a 'per skin' basis, this may account for the slight proportional increase in bigger skins imported by Excelsior in 1981-82 (see Fig. 3). The data provided by Gordon Choisy do not show a similar proportional increase in skin size but they do show a sharp drop in the number of skins imported in 1982.

The minor fluctuations in the size-frequency of the skins imported by Excelsior (Fig. 3) may also be attributable to the harvesting regime. According to V. Margossian (pers. comm.), rotational and selective hunting leaves areas untouched in some years, and certain size classes may be preferentially targetted.

DISCUSSION AND CONCLUSIONS

In order to make comparisons between the three sets of data it is necessary to adjust the annual totals reported by Excelsior to calendar years. This was approximated by averaging the totals for adjacent years, and the resulting averages were added to the totals reported by Gordon Choisy to give the dealer's totals in Table 6. The export totals to Europe alone reported by the Sudanese Customs, and the minimum net trade in Sudanese skins calculated from the CITES reports is also given in the table. It should be noted that the Customs figures are given in kg of skins while the other two sources gave numbers of skins. Different methods of reporting make it possible that the same skins reported by one source in one year may be reported in the following year by another source. All comparisons must therefore be treated with caution.

There was very poor correlation between the Customs data and the CITES Reports. While the imports to France would not be expected to have been reported (because of French policy not to report Appendix II imports), the imports to Switzerland and the UK should have featured in the CITES reports unless they had merely been in transit for onward shipment to other countries. It is true that the Customs reports may include other species of crocodilian, as Tello (1985) asserted that a large percentage of the trade was in Osteolaemus tetraspis and Crocodylus cataphractus, but CITES reports contained no records of trade in either of these species originating in Sudan.

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There was a similarly poor correlation with the dealers' data, suggesting that other dealers apart from the three consulted may have been importing substantial quantities of skins from Sudan. In particular, the Customs data indicated exports to Switzerland prior to 1980, and to France and the UK in 1982, which did not appear to be reflected in the dealers' data. CITES reports also reveal a large imports to France and Italy in 1983, when the dealers consulted reported little (or no) trade.

Finally, it should be noted that whereas the export trade to Europe formerly constituted the bulk, if not all, of Sudans' exports, it appears from the Customs data that Saudi Arabia and Egypt took 55% of the reported trade in 1982. This is further corroborated by Tello's (1985) reports of substantial trade to these two countries.

Table 6. Comparison of the total trade in crocodile skins between Sudan and Europe from three sources of data. See text for explanation.

Source	1978	1979	1980	1981	1982	1983	1984
Dealers (skins)	9552+	11743	16502	11907	2541	3852	3997
Customs (kg)	34582	17250	3415		20215		
CITES (skins)	0	0	7520	6172	3905	15897	0

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Japanese Imports of Crocodile and Alligator Skins

1970 - July 1986

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INTRODUCTION

This report was produced by TRAFFIC(Japan), with the cooperation of the All Japan Association of Reptile Skin and Leather Industries, as part of the International Alligator and Crocodile Trade Study (IACTS) project.

Domestically, the Japanese reptile skin industry has a fairly long history. Currently the importation and tanning of skins affords employment for approximately 300 people. In order to protect the commercial interests of this industry at the time of Japan's accession to CITES, the government found it expedient to place reservations on seven reptile species listed in Appendix I, including Crocodylus porosus.

Japanese imports of crocodilian skins comprise a significant part of the total international trade. It has long been recognized that the CITES statistics give a poor indication of this trade and that more complete data are contained in Customs statistics (Hemley and Caldwell, 1986). However, Customs data only record the trade by weight and do not separate the different crocodilian species. This study introduces new data, supplied by the importers themselves, which, in addition to Customs statistics, serve to bridge the gap and allow the most comprehensive evaluation of the trade to date.

The data are presented in two major sections: the first is organized by species and the second by countries. Other sections present an overview of the trade from 1970 to July 1986, examine the value of Japan's imports, and discusses future trade options in relation to current CITES controls and national trade restrictions.

In the report, the definition of 'classic' crocodilian skins follows Fuchs (1975) to refer to 'non-ossified' skins which are derived from Alligator mississippiensis and all Crocodylus species.

METHODS

This report is primarily based upon two sources of data. First, Japanese Customs statistics produced by the Japanese Ministry of Finance provide data on imports of crocodilian skins in two separate categories. One category, 41.01.271 "Alligator and Crocodile Skins", quantifies imports of raw skins by weight in kilograms, declared value in yen, and country of origin if declared, otherwise country of export. The other category, 41.05.221 "Alligator and Crocodile Leather", does the same for imports of tanned skins. The Customs data do not provide information on species or the number and size of skins represented in the trade. Customs statistics for imports of raw crocodilian skins from 1970 to July 1986 are given in Appendix I. Appendix 10 presents Customs data on crocodile leather imports from 1977 to 1984.

The second source of data was obtained through the cooperation of the All Japan Association of Reptile Skin and Leather Industries, a trade association of 39 companies engaged in the import, tanning and marketing of reptile skins in Japan. In September 1985, a detailed questionnaire (Appendix 2) was sent to 24 companies identified as importers of crocodilian skins. The survey solicited data at the species or subspecies level for all imports between 1977 and 1984. Based upon company records compiled by the dealers themselves, these data identified countries of export, origin, or re-export and the number and weight of skins for wet-salted, dry-salted, or tanned imports. The

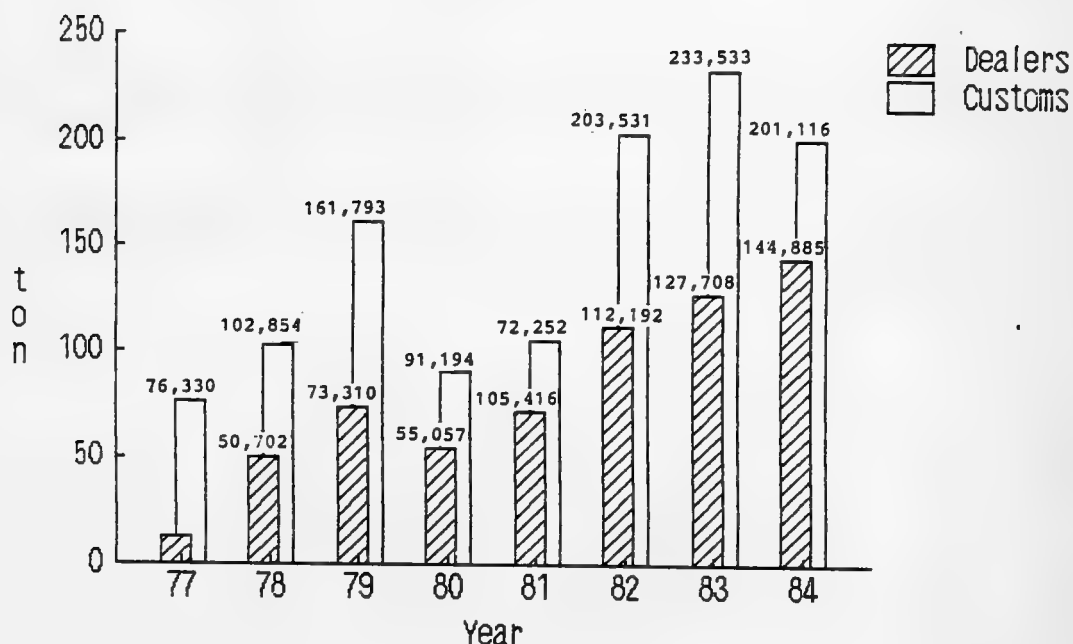


Figure 1: Comparison of dealers' data and Customs statistics for imports of Crocodile and Alligator skins by weight (including tanned pieces).

Source: Japanese Customs statistics, dealers' data

importers were also asked for the annual minimum, maximum and average width or length of the skin pieces.

Of the companies surveyed, ten replied, one of which was no longer engaged in importation during the period examined. The other nine include all but one of the major companies known to engage in large-scale importation. Some dealers reported that their records for the years 1977 to 1979 were incomplete. Accordingly, there is only an 18% correlation with the Customs figure for 1977, but the dealers' data from 1980, the year Japan acceded to CITES, through 1984 are reasonably complete, with correlation ranging from 54.7% to 72% (Figure 1).

The dealers' data are presented in Appendices 3 through 7. While overall the quality of the data appears to be very good, two points need to be made. First, size was reported in both imperial and metric units, but generally, one system or the other characterized the measurements given for any particular species. For example, all dealers reported measurements of Alligator mississippiensis in feet and inches, whereas Melanosuchus niger measurements were always given in centimetres. When the original units were imperial, the metric equivalents have been given in brackets. All measurements in the Appendices are presented in metric units.

Secondly, the analysis of weights for some species reveal certain discrepancies which largely defy logical interpretation. For example, similar sized skins show widely varying average weights, or as skins become larger, weights become smaller, or vice versa. These discrepancies probably result from data being mis-reported by the dealers, but, where dry- and wet-salted skins are concerned, it must be noted that weights would be variable anyway due to the varying amount of salt used in individual shipments. These factors, unfortunately, make it virtually impossible to derive weight conversion factors from the dealers' data to estimate the number of skins represented in the Customs data. Therefore, the weight data are given in Appendix 7, but not presented in the main text.

A brief discussion of the trade in raw skins from 1970 to July 1986, based upon Customs statistics, is presented as an overview of the Japanese trade, with the statistical data given in Appendix 1. The "Imports by Species" section of this report is based upon analysis of the dealers' data, while in the "Countries of Origin/Export" section Customs statistics from the years 1977 to 1984 are analysed together with the dealers' data for the same period. Customs statistics for imports of raw crocodilian skins form the basis for the section "Values of the Trade in Raw Crocodilian Skins".

Another source of data for trade in crocodilian skins, CITES Annual Report statistics, are not analysed against the other data used in this report, but are presented in Appendix 8 for reference. The fact that from the years 1980 to 1984 virtually all of Japan's imports of crocodilian skins were identified only as "Crocodylidae or Alligatoridae spp." in the Japanese CITES Annual Reports makes interpretation and correlation of those data with other sources difficult.

Finally, discussions with the dealers produced a wealth of anecdotal information about the trade based upon their experiences in the business. Where appropriate, pertinent information is used to make points in the text of the report, but is noted accordingly as originating from the dealers. The dealers also outlined formulae for converting skin length to belly width and vice versa. These conversion factors are presented in Appendix 9.

AN OVERVIEW: JAPANESE CUSTOMS DATA 1970 TO JULY 1986

Japan's imports of raw crocodilian skins from 1970 to July 1986 ranged from a low of 22 644 kg in 1974 to a record high of 233 533 kg in 1983, according to Japanese Customs statistics (Figure 2). A total of 2 004 740 kg of raw skins were imported during this period, with 63% of the trade coming from Latin American or Caribbean countries, followed by 26% from Asian or Oceanian countries. Only in 1974, 1977 and 1986, were Asian imports greater (Figure 3). North America, specifically the USA, was the third major supplier of skins, but imports from there never reached 20% of the trade in any given year. Annual imports from all countries during this period are presented in Appendix 1, arranged by region and in descending order of overall trade volumes by countries.

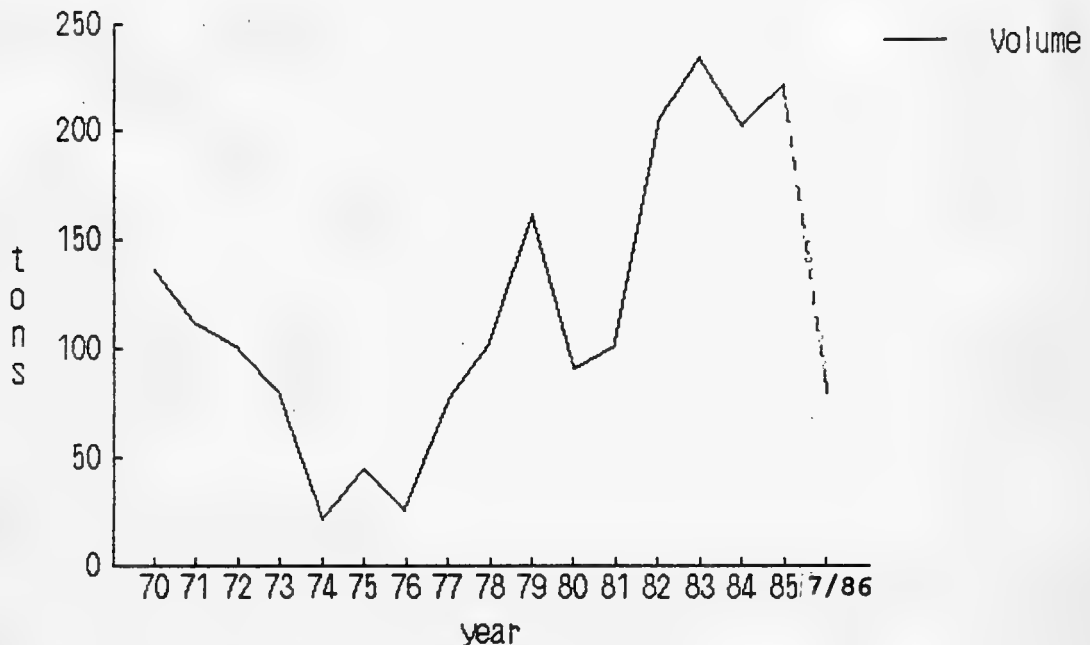


Figure 2: Total imports by weight of raw crocodilian skins

Source: Japanese Customs statistics

In Figure 2 three salient patterns for the period can be seen. The first trend was one of decline from 1970 to 1976; the second was a period of expansion from 1977 to April 1985; and the third, from May 1985 to the present, is characterized by a substantial reduction in import levels. The period examined in detail in this report covers the years of major growth from 1977 through 1984, the last full year of the second trend.

In more specific terms, Customs statistics showed a downward trend in raw skin imports from 1970 to 1974, after which the trade remained at a low level through 1976. The pattern during this period resulted from a progressive decline in imports from Colombia, Papua New Guinea, and USA, which probably reflected the depletion of accessible crocodilian stocks or the introduction of protective legislation in those countries (Groombridge, 1982; Donadio, 1982). At the same time, the situation was exacerbated by the 'oil shock' of 1973, which resulted in a general economic recession in Japan lasting for the next couple of years.

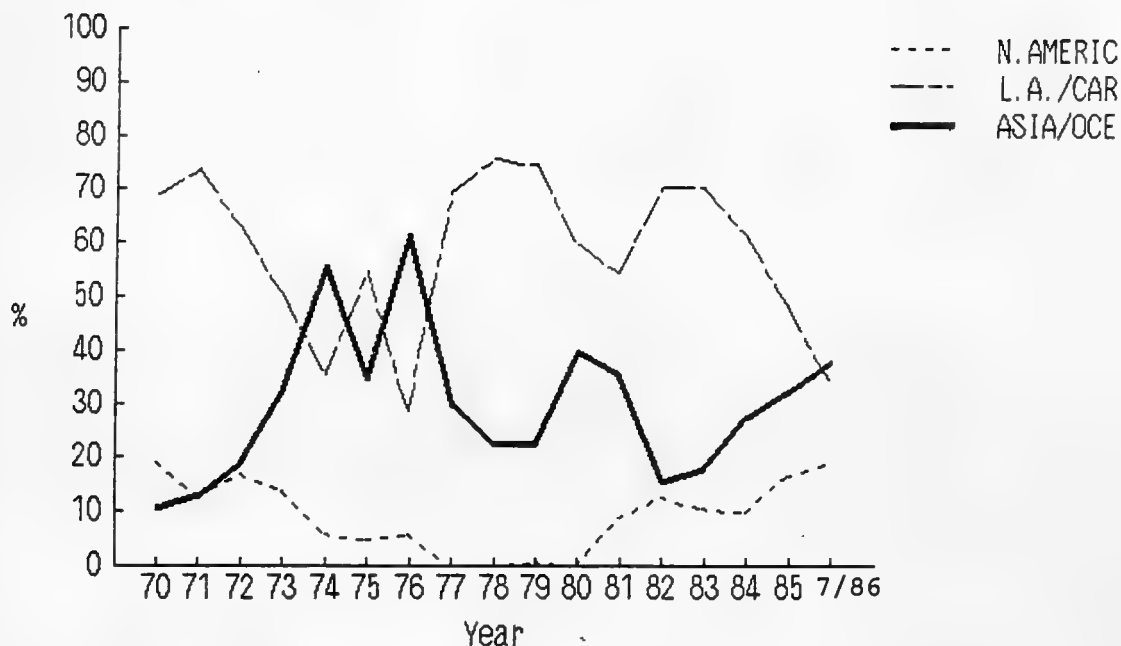


Figure 3: % of total imports by weight originating in Latin America/Caribbean, Asia/Oceania, and North American countries
Source: Japanese Customs statistics

With economic recovery clearly in hand by 1977, the Japanese trade picked up and experienced remarkable growth through 1985, but with some rather dramatic fluctuations. The upward surge in 1979 reflected a stockpiling effort by the industry, stimulated by fears of imminent Japanese ratification of CITES. The significant decline in 1980, the year Japan finally acceded to the Convention, and the slight growth in 1981, were attributable to adjustments the industry made to CITES Regulations taking effect both at home and abroad and to temporary cash flow problems resulting from the 1979 stockpiling. Sky-rocketing imports in 1982 and the subsequent maintenance of record trade levels through 1985 resulted from expansion of both legitimate and illegitimate sources. Of particular note was the dramatic development of trade with Paraguay, which first emerged as a source for skins in 1977, rapidly becoming the major supplier. At the same time, other contributing factors included the resumption of stable and expanding trade with the USA and Papua New Guinea, which have generally complied with CITES requirements, and the increasing development of Indonesia, as a major source, and Thailand, as a minor source, of skins.

In April 1985, Japan instigated new import restrictions in the wake of stern international criticism of Japan's allowance of trade from illegal sources, particularly Paraguay. As a result of attempts to comply with the new regulations, new patterns of trade have emerged. While the time span is not sufficient to make a definitive assessment, it is nonetheless evident that the industry has entered a period of re-adjustment in attempting to locate legal sources of skins. While direct trade from Paraguay has apparently ceased, stable Latin American routes have yet to be defined and it is possible that some skins are merely being re-routed. The sudden appearance of El

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Salvador, Honduras, and Argentina as suppliers of skins needs explanation. Similarly in Asia, the sudden emergence of trade with Taiwan, historically not a supplier of skins to Japan, and a dramatic increase in imports from Malaysia needs verification. Trade from Indonesia and Singapore, always problematic, continues to exhibit unstable fluctuations which are in need of further interpretation. And finally, on a promising note, modest, but increasing trade from Africa indicates that new direct trade routes are being developed for legitimate sources of skins from that continent and trade with USA remains stable.

IMPORTS BY SPECIES

Eight species, including three subspecies, were identified as imported in the dealers' data during the period examined. They are Alligator mississippiensis, Caiman crocodilus (yacare and crocodilus), Melanosuchus niger, Crocodylus cataphractus, C. niloticus, C. novaeguineae (novaeguineae), C. porosus, and C. siamensis. Although trade volumes by weight for individual species fluctuated, the overall trade pattern was one of steady growth (Figure 4). Dealers reported receiving a total of 649 815 kg of crocodilian skins and leather during the period examined.

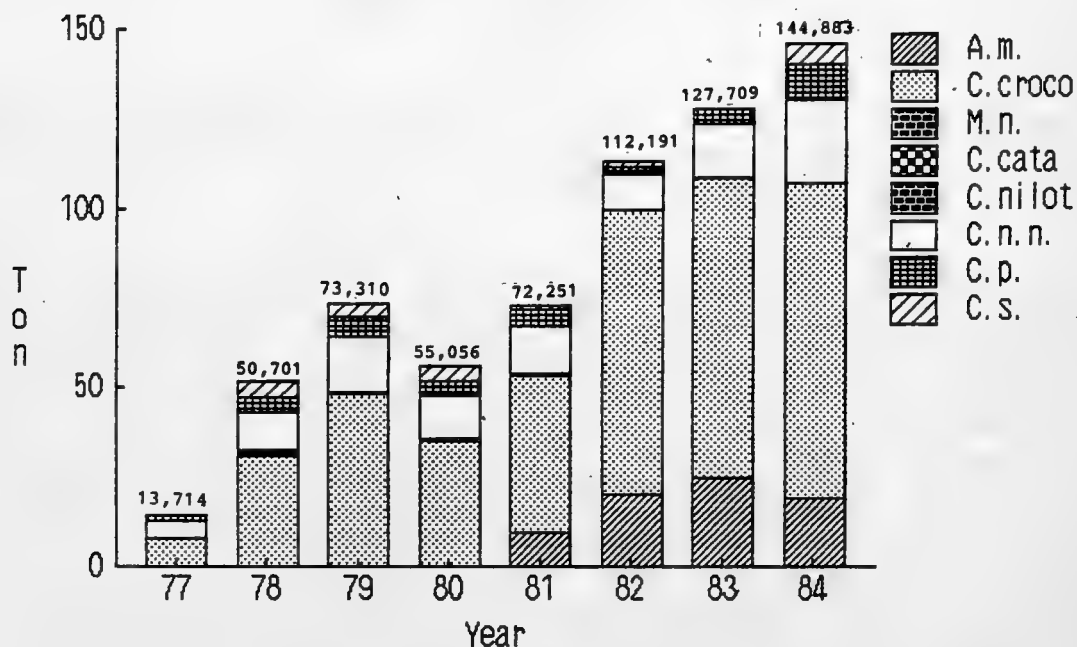


Figure 4: Total imports by weight of crocodilian species (including tanned skin pieces)

Source: Dealers' data

When trade volumes were analysed by number of skins inclusive of tanned skin pieces, imports peaked in 1979 at 316 759 skins (including over 110 000 tanned skin pieces). Thereafter, imports remained fairly stable at between approximately 200 000 to 270 000 skins annually over the next five years (Figure 5). A total of 1 724 788 skins were imported into Japan, according to the dealers' data.

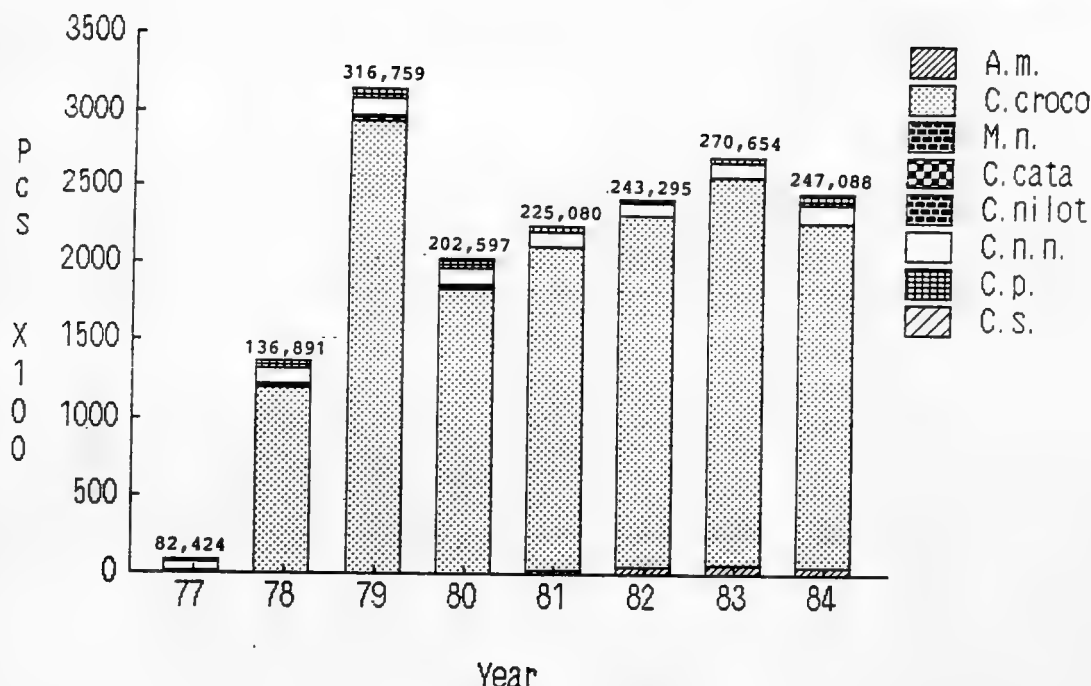


Figure 5: Total imports by number of skins of crocodilian species (including tanned skin pieces)

Source: Dealers' data

The number of species comprising the annual trade varied from four to seven, but an average year involved six species. However, three to four species accounted for most of the total trade by weight and by number of skins in all years. Those species, and their percentage of the total trade by weight and number of skins respectively from 1977 to 1984 are: Caiman crocodilus (63.8% / 91.6%), Crocodylus novaeguineae (16% / 4.6%), Alligator mississippiensis (11% / 1.1%), and Crocodylus porosus (5.6% / 1.9%). However, A. mississippiensis only appears in the dealers' data since 1981 and represents 15.7% by weight and 2.0% by number of skins in trade for those years.

Caiman crocodilus

The taxonomy, distribution and population status of Caiman crocodilus is problematic. Between four to seven subspecies are recognised (Groombridge, 1982), but crocodilus, yacare and fuscus are the ones generally described in trade. C.c. fuscus has a distribution from southern Mexico through Central America to the coastal regions of Venezuela, Colombia and Ecuador; C.c. crocodilus occurs east of the Andes throughout the Amazon basin possibly as far south as extreme northern Bolivia and extreme northwestern Paraguay; C. c. yacare occupies the southernmost range of the species, occurring in southern Brazil, Bolivia, Paraguay, and northern Argentina (Groombridge, 1982; King, pers. comm.).

All of these subspecies are on CITES Appendix II, but varying degrees of protection from exploitation and commercial export are given under national

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laws in range countries. Although poorer in quality than Melanosuchus niger or the classic crocodilians, the Caiman skin trade forms the backbone of the Japanese industry.

Dealers' data by weight

In the dealers' data by weight, C. crocodilus maintained the top position for all years, ranging from 54.4% in 1977 to 70.8% in 1982 (Figure 4). The volume of imports by weight rose from 7459 kg in 1977 to 87 650 kg in 1984, to total 414 308 kg overall (Figure 6). Between 1982 and 1984 reported volumes were roughly double those of the preceding period, and 1984 represented an all-time high.

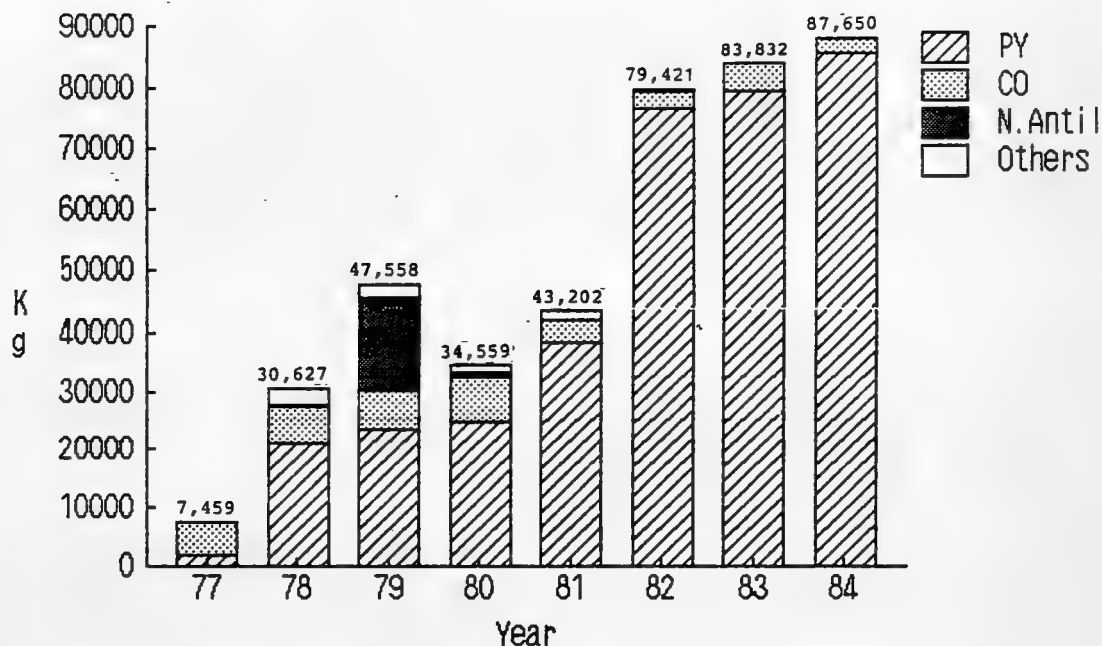


Figure 6: Total imports by weight of Caiman crocodilus and top three countries of origin (including tanned skin pieces)

Source: Dealers' data

Dealers' data by number of skins

By number of skins (exclusive of tanned skin pieces), the data showed a pattern of growth similar to that when the trade was analysed by weight, with the exception that 1984 imports declined slightly (Figure 7). A total of 1 344 451 dry- and wet-salted skins were reported, with imports ranging from a minimum of 70 733 skins in 1977 to a peak of 251 742 in 1983.

Additionally, a total of 234 757 tanned skin pieces were imported between 1977 and 1982 (Figure 8). The trade peaked in 1979 at 106 073 skins, but over 50 000 skin pieces were imported in 1980 and 1981 before dropping off completely in 1983 and 1984.

(x 10.000pcs.)

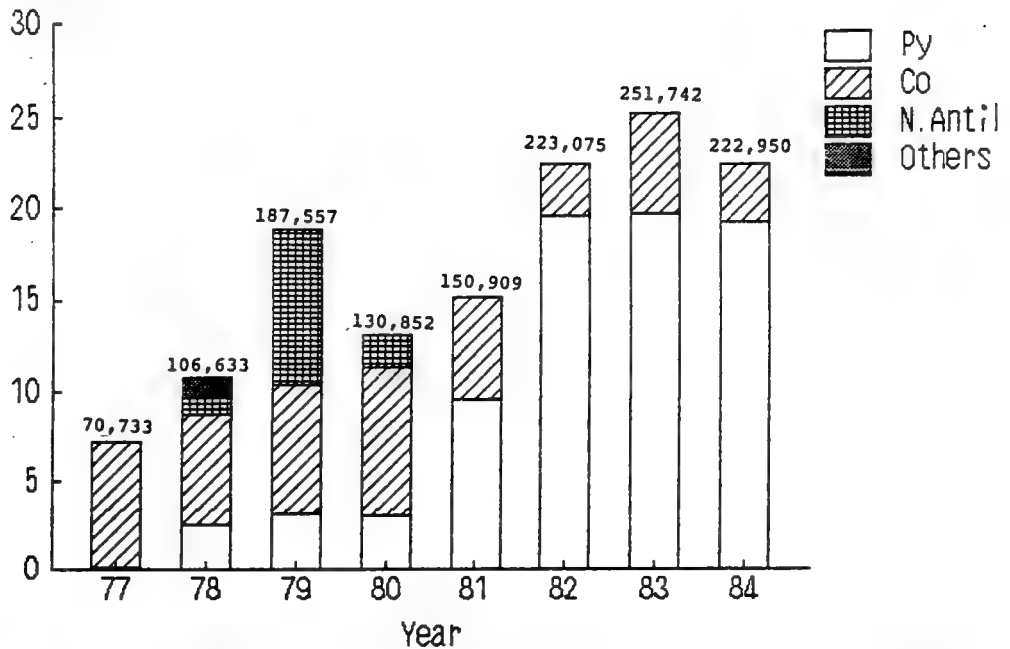


Figure 7: Total number of Caiman crocodilus skins and top three countries of origin (excluding tanned skin pieces)
Source: Dealers' data

(x 100pcs.)

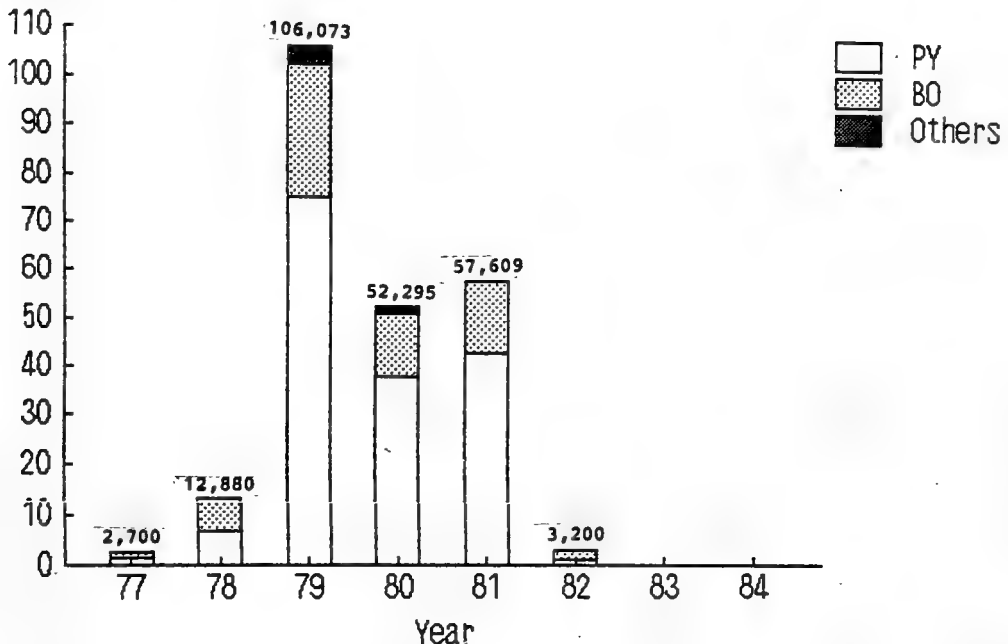


Figure 8: Total number of Caiman crocodilus tanned skin pieces
Source: Dealers' data

Sources of skins

Five countries were declared as countries of origin for raw Caiman skins. Of these, Paraguay was by far the major exporter by weight, representing 85.3% of the total trade, followed by Colombia at 10%. Imports from Colombia declined sharply in 1978 when Paraguay emerged as the primary source for Caiman skins (Figure 6). Although supplying only 4.2% of the total trade by weight to become the third largest source of raw skins for the period examined, imports from the Netherlands Antilles were erratic. Trade was reported in only three years, but in 1979, 42.4% of all Caiman skins came from the Netherlands Antilles, surpassing trade from both Paraguay and Colombia (Figure 6). Finally, Peru and Venezuela appeared in the data as other minor sources.

Patterns in the data change significantly, however, when the number of raw skins and their sources are analysed. More skins were received from Colombia or, in the case of 1979, from Colombia and the Netherlands Antilles, than from Paraguay up to 1980 (Figure 7), although by weight Paraguayan imports dominated the trade in 1978 and from 1980 onward (Figure 6). From 1981 to 1984 the number of skins received from Paraguay ranged from 63.1% to 87.4% of the total number, with Colombia accounting for most of the remainder.

The tanned skin pieces were imported from five countries, with 70% of the trade originating from Paraguay (Figure 8). Bolivia accounted for most of the remainder, but small quantities of tanned skin pieces were also received from Argentina, Panama via West Germany, and Spain (country of origin not declared).

Size of skins

The average length of Caiman crocodilus skins from Colombia and the Netherlands Antilles was considerably smaller than the size of Paraguayan skins (Figure 9) (see Countries of origin/Export section).

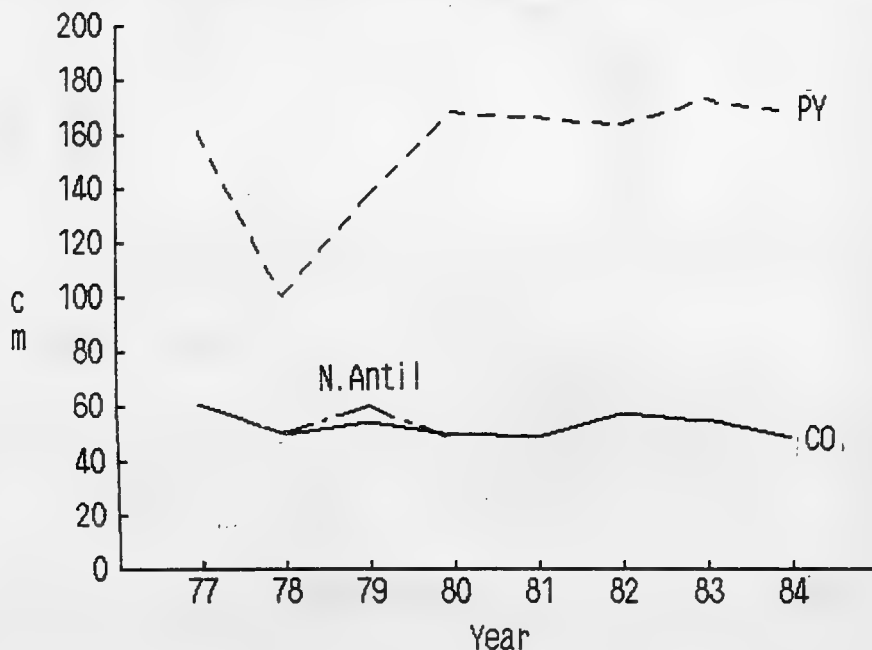


Figure 9: Average length of dry-salted Caiman crocodilus skins from Colombia, Netherlands Antilles, and Paraguay
Source: Dealers' data

Overall, the average length of raw Caiman skins showed a rather dramatic increase in length over the period examined (Figure 10). While a gradual increase in size was shown from 1977 to 1980, the average length of skin size climbed from 66.2 cm in 1977 to 160.2 cm in 1982.

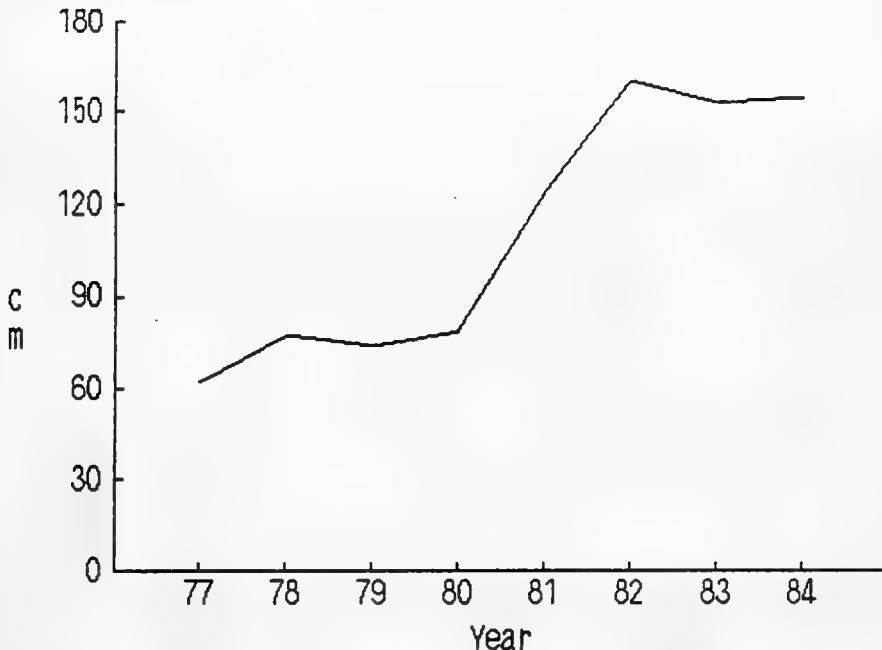


Figure 10: Overall annual average length of Caiman crocodilus skins
Source: Dealers' data

Geographical variations in size are linked to the distribution of the different subspecies in trade: C.c. yacare is generally a much larger subspecies, attaining a size of 2.5 m to 3 m, while the maximum size of C.c. crocodilus is 2 m to 2.5 m (Groombridge, 1982). The fact that from 1977 through 1980 imports from Colombia and the Netherlands Antilles comprised from 66.7% to 83.7% of the total number of raw skins imported may explain the smaller average length for those years. Skins imported from those two countries were substantially smaller in size than those from Paraguay and were believed by the dealers to have originated in Colombia or north-western Brazil. Thus, they most probably represented the subspecies C.c. crocodilus.

Rising trade volumes and the increased percentage of the total trade which Paraguayan skins represented from 1980 onward may explain the increase in average skin size over this period and could indicate that large numbers of C.c. yacare skins were being imported. In fact, when interviewed dealers suggested that much of the trade from Paraguay originated from the Mato Grosso region of Brazil, where C.c. yacare is distributed, but nonetheless identified the bulk of the trade as C.c. crocodilus when responding to the questionnaire.

Crocodylus novaeguineae

Under CITES nomenclature, Crocodylus novaeguineae is treated as having two subspecies, the endangered C.n. mindorensis, which is endemic to the Philippines, and C.n. novaeguineae, with a range restricted to New Guinea

(Groombridge, 1982). The Philippine subspecies has been listed in Appendix I of CITES since 1975, but C.n. novaeguineae was considered to have exploitable populations in both Indonesia and Papua New Guinea and accordingly was listed in Appendix II. Additionally, ranching or captive-breeding operations in Papua New Guinea, Indonesia maintain commercial quantities of the species (Luxmoore et al., 1985). (The Japanese Government, through an overseas development and agreement with the Philippines, is currently funding the construction of a captive-breeding farm on the island of Palawan for C.n. mindorensis and C. porosus.)

Dealers' data by weight

Readily available from neighbouring countries, C.n. novaeguineae is a very important species for Japanese importers. In the dealers' data by weight, novaeguineae was overall the second most imported species in all years except 1982 and 1983 when imports of Alligator mississippiensis were greater. Imports totalled 103 932 kg over the period examined and, as a proportion of the total trade by weight, averaged 16% overall, ranging from 34.4% in 1977 to 8.6% in 1982 (Figure 4). Imports in 1977 represented a low of 4 721 kg, with trade peaking in 1984 at 23 214 kg (Figure 11).

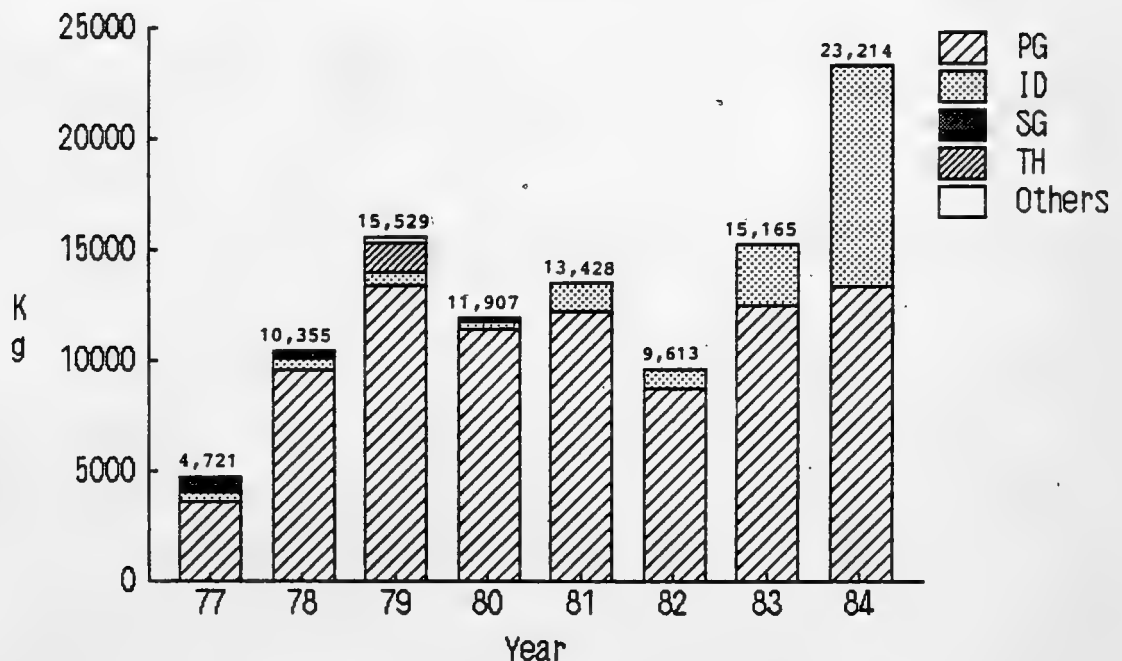


Figure 11: Total imports by weight of Crocodylus novaeguineae skins and top four countries of origin (including tanned skin pieces)

Source: Dealers' data

Dealers' data by number of skins

By number of skins, C.n. novaeguineae was the second most imported species in all years (Figure 5). A total of 78 987 wet-salted skins were imported, with numbers ranging from a low of 5766 skins in 1977 to a high of 12 562 skins in 1984 (Figure 12). The trade pattern exhibited in the data generally followed that of imports by weight with the exception that in 1981, the number of skins decreased slightly, whereas by weight the pattern showed a slight gain (Figure 11). An additional 681 tanned skin pieces were also included in the data.

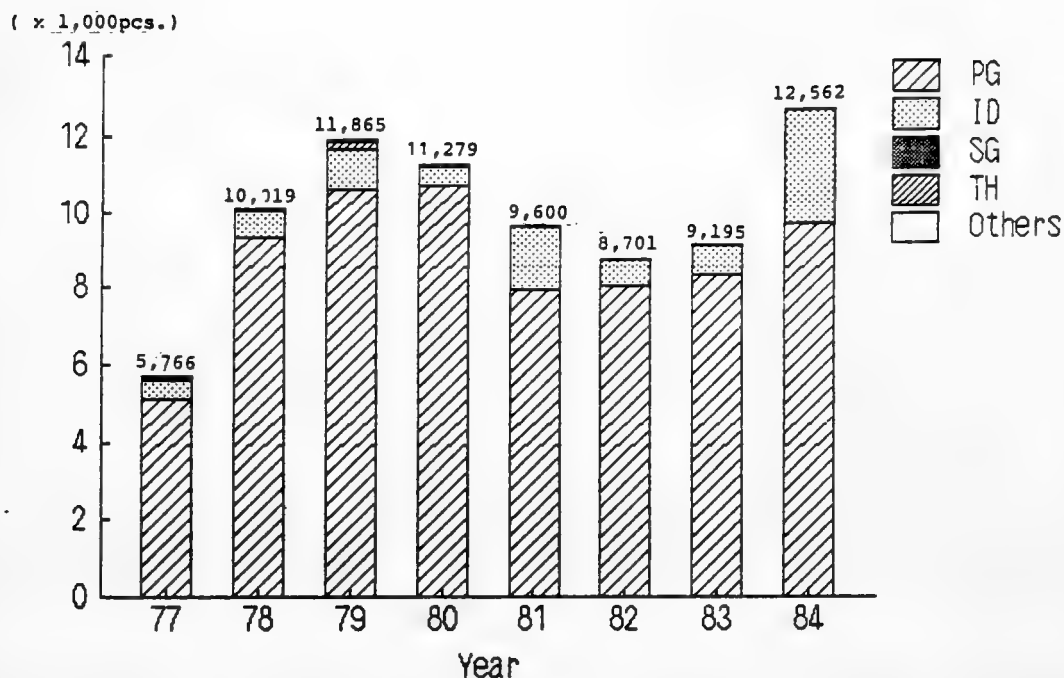


Figure 12: Total number of Crocodylus novaeguineae skins and top four countries of origin (excluding tanned skin pieces)

Source: Dealers' data

Sources of skins

Papua New Guinea, Indonesia, the Philippines, Thailand and Singapore were all declared as countries of origin for imports of raw C.n. novaeguineae skins. Of these, Papua New Guinea and Indonesia were by far the most important sources. The proportion of imports by weight from Papua New Guinea ranged from 95% in 1980 to 57% in 1984, when imports from Indonesia increased substantially to 43% of the total trade (Figure 11).

The proportion of Papua New Guinea imports by number of skins ranged from 77.3% in 1984 to 95.1% in 1980, while skins which originated in Indonesia accounted for between 4.6% in 1980 to 22.7% in 1984 (Figure 12). Again, this pattern was generally similar to the one for imports by weight.

Size of skins

The average belly widths of C. novaeguineae skins varied considerably depending on the country of origin or export. The size of skins received directly from Papua New Guinea varied the least over time, whereas belly widths for skins received from Indonesia or re-exports from Singapore fluctuated during the period examined (Figure 13) (see Countries of origin/Export section). However, in Indonesia the method for measuring belly widths is apparently different from that in Papua New Guinea (Hall, pers. comm.). If Japanese dealers relied upon measurements reported on the invoices, respective figures for the two countries would possibly not be comparable.

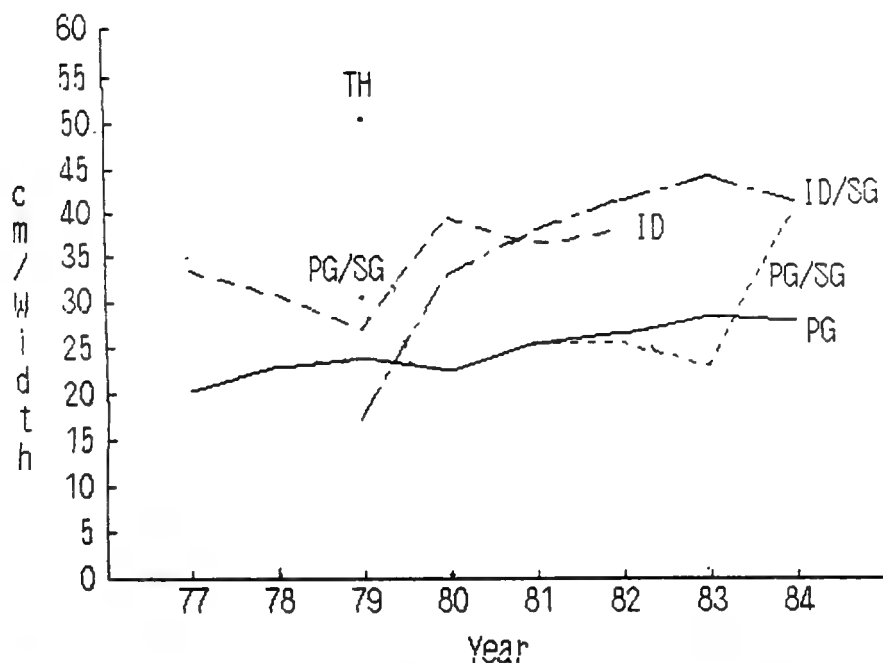


Figure 13: Average belly widths of wet-salted Crocodylus novaeguineae skins from Indonesia, Papua New Guinea, Singapore, and Thailand

Source: Dealers' data

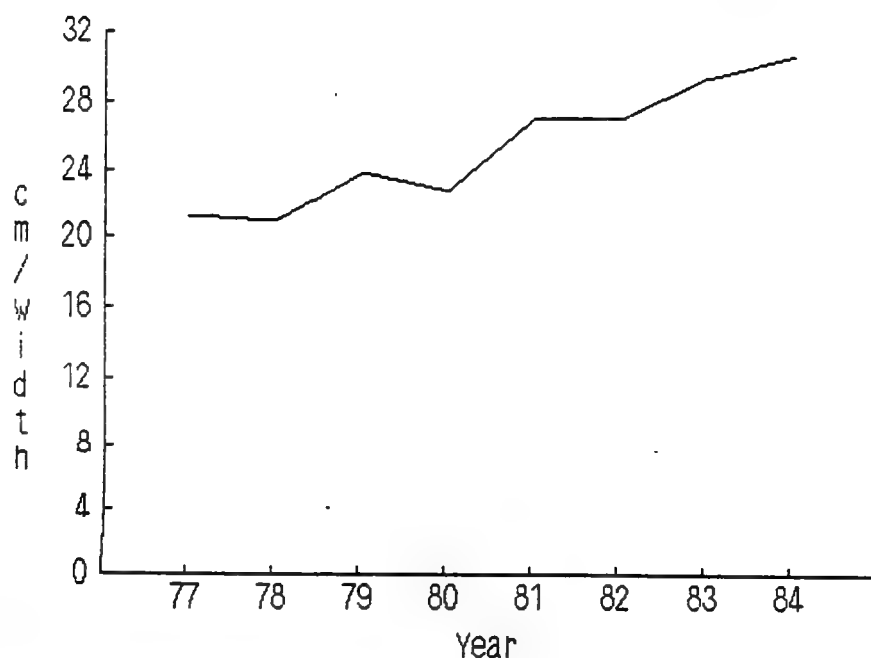


Figure 14: Overall annual average belly width of wet-salted Crocodylus novaeguineae skins

Source: Dealers' data

Overall, the average width of novaeguineae skins increased gradually from 8.5 in (21.6 cm) in 1977 to 12.2 in (31 cm) in 1984 (Figure 14). This trend probably reflects the situation in Papua New Guinea, where exports of skins with belly widths smaller than 7 in (17.8 cm) were prohibited in 1981. The increasing proportion of larger skins from elsewhere, particularly Indonesia, makes the overall trend greater than that for Papua New Guinea alone.

Crocodylus porosus

Formerly distributed from the coasts of India throughout South East Asia, to northern Australia and the western Pacific, Crocodylus porosus is severely depleted and at risk almost throughout its range (Groombridge, 1982). Only the populations in Australia and New Guinea are recognised as being able to sustain commercial exploitation. As a result, most habitat countries protect C. porosus through domestic legislation, and the species was listed in CITES Appendix I in 1975. Since then, a variety of trading options have been developed. Ranching programmes exist in Papua New Guinea and Australia, and captive-breeding operations have been registered with the CITES Secretariat in Thailand and Australia. The population of Indonesia was transferred to Appendix II under a quota scheme in 1985. Initially, several countries placed reservations on C. porosus; now, only Austria, Japan, and Singapore hold reservations.

Dealers' data by weight

C. porosus is very important in the Japanese trade, representing the highest quality crocodilian skin regularly imported into Japan in substantial quantities. In terms of overall trade, the dealers' data showed C. porosus

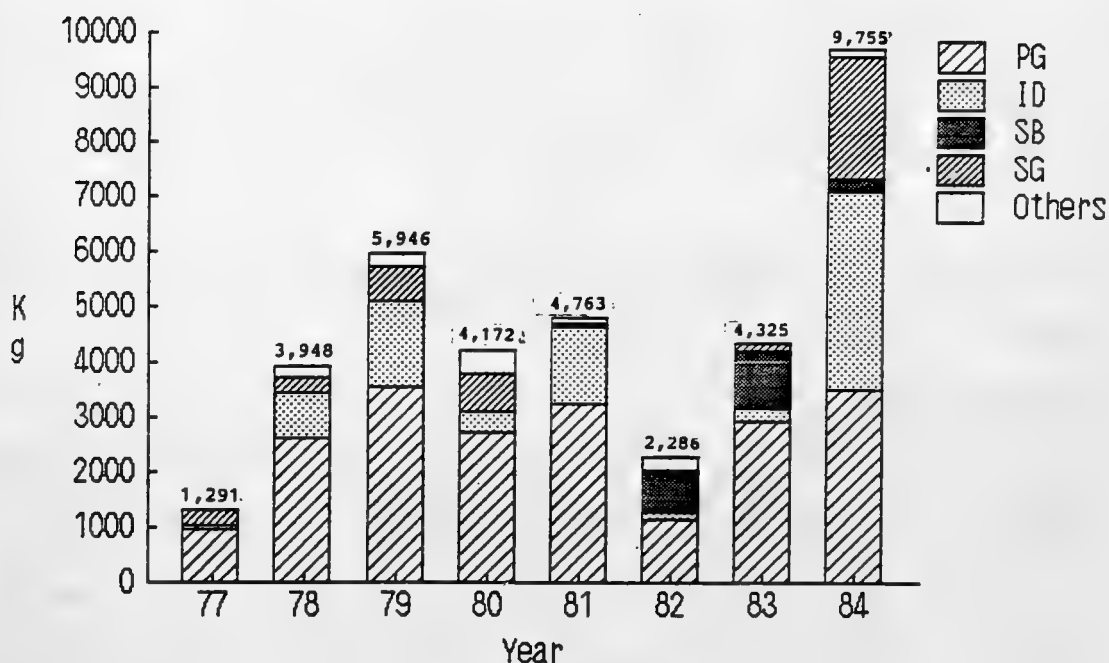


Figure 15: Total imports by weight of Crocodylus porosus skins showing top four countries of origin (including tanned skin pieces)

Source: Dealers' data

Japan Imports

accounting for 5.6% of the total imports by weight, with a range from 2% in 1982 to 9.4% in 1977 (Figure 6). A total of 36 486 kg were imported, making C. porosus the fourth most imported species. By weight, imports fluctuated between 1291 kg in 1977 to 9755 kg in 1984 (Figure 15).

Dealers' data by number of skins

In terms of numbers, a total of 31 937 raw skins were imported (Figure 16), with imports ranging from a low of 1473 skins in 1977 to a high of 6050 skins in 1984. The general trend in the data for number of skins was similar to that for the trade by weight, with the exception that in 1981 the number of skins imported dropped, while the weight of the trade increased (Figure 15). An additional 150 pieces of tanned C. porosus were received in 1978 and 1982.

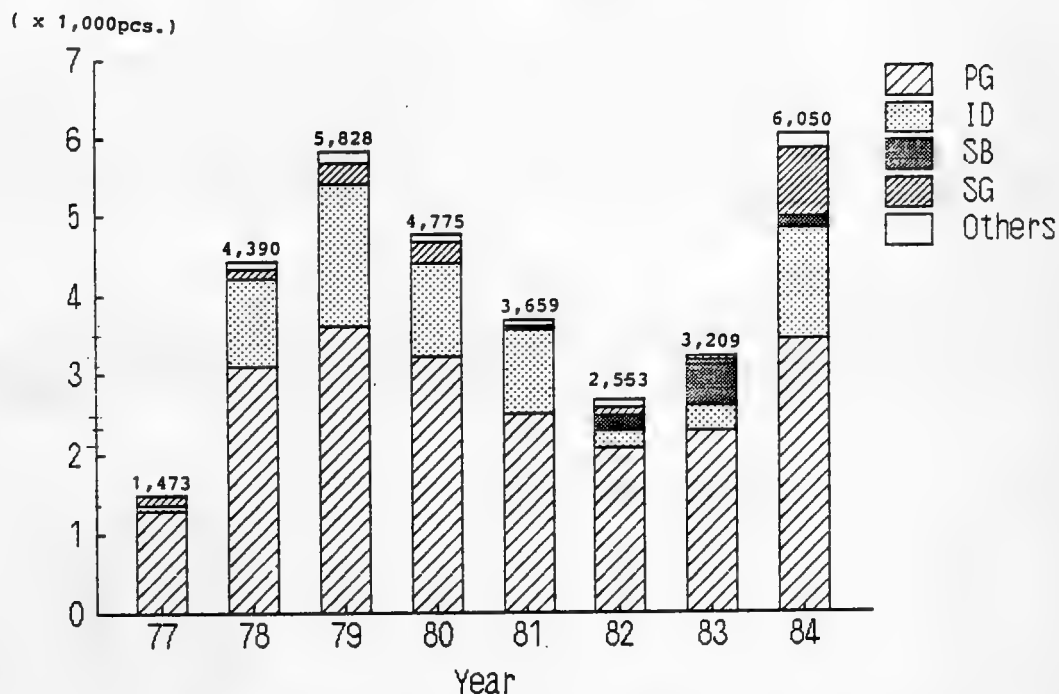


Figure 16: Total number of Crocodylus porosus skins showing top four countries of origin (excluding tanned skin pieces)

Source: Dealers' data

Sources of skins

Although Papua New Guinea, Indonesia, Singapore, the Palau Islands, Malaysia, and the Solomon Islands are all declared as countries of origin, the two major suppliers, Papua New Guinea and Indonesia, together accounted for more than 85% of the raw skins in trade by weight.

Imports by weight from Papua New Guinea generally declined from 75% of the total trade in 1977 to 36% in 1984. Imports from Indonesia rose from 5% in 1977 to 55% of the trade in 1984, to surpass Papua New Guinea as the major supplier of porosus skins. Erratic trade with the Solomon Islands began in 1981 and ranged from 2% in that year to 31% in 1982, an increase which was reflected in a relative decrease in imports from both Papua New Guinea and Indonesia (Figure 15).

When analysed by number of skins, trends for the three leading exporters are similar to those exhibited in the data by weight, except that in 1984 Papua New Guinea exported twice as many skins as Indonesia (Figure 16), while the data by weight showed Indonesian imports slightly surpassing Papua New Guinea for the first time in the period examined (Figure 15).

The small quantity of tanned skin pieces reported by the dealers were received from France and Singapore.

Size of skins

With the exception of a very small quantity of tanned skin pieces, all C. porosus skins were wet-salted. Average belly widths fluctuated considerably, with the exception of trade from Papua New Guinea which gradually increased over the period examined (Figure 17). Skins from Indonesia, Solomon Islands and re-exports from Singapore were generally much larger than imports received directly from Papua New Guinea (see Countries of origin/Export section).

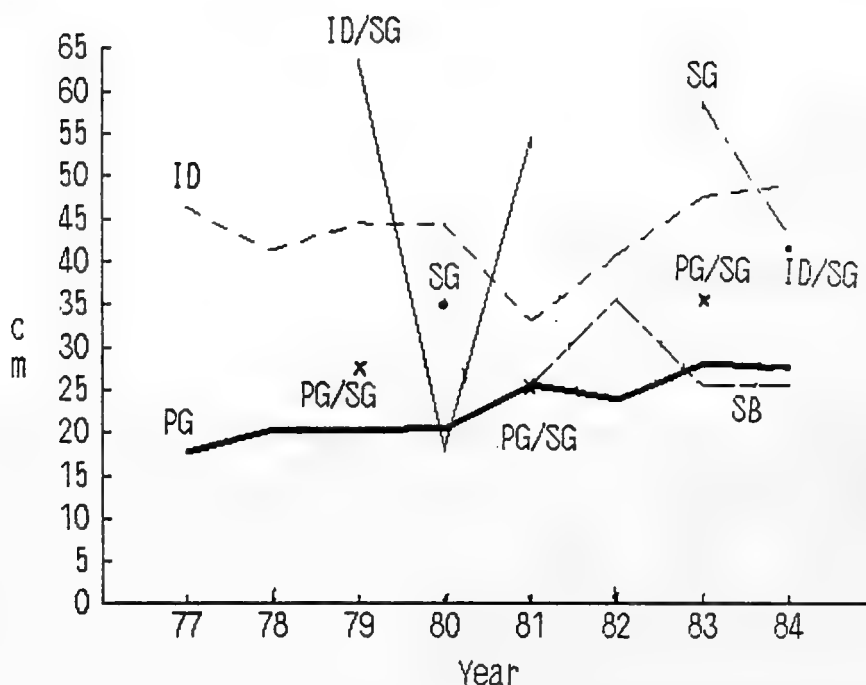


Figure 17: Average belly widths of wet-salted Crocodylus porosus skins from Indonesia, Papua New Guinea, Singapore, and the Solomon Islands

Source: Dealers' data

Skins of Indonesian origin generally had larger average belly widths than exports from Papua New Guinea, where there is a maximum size limit. However, as previously mentioned, the two countries measure belly widths in different ways and the data may not be comparable.

Overall, the average belly width of C. porosus increased from 7.6 in (19.3 cm) in 1977 to 13.3 in (33.8 cm) in 1984 (Figure 18).

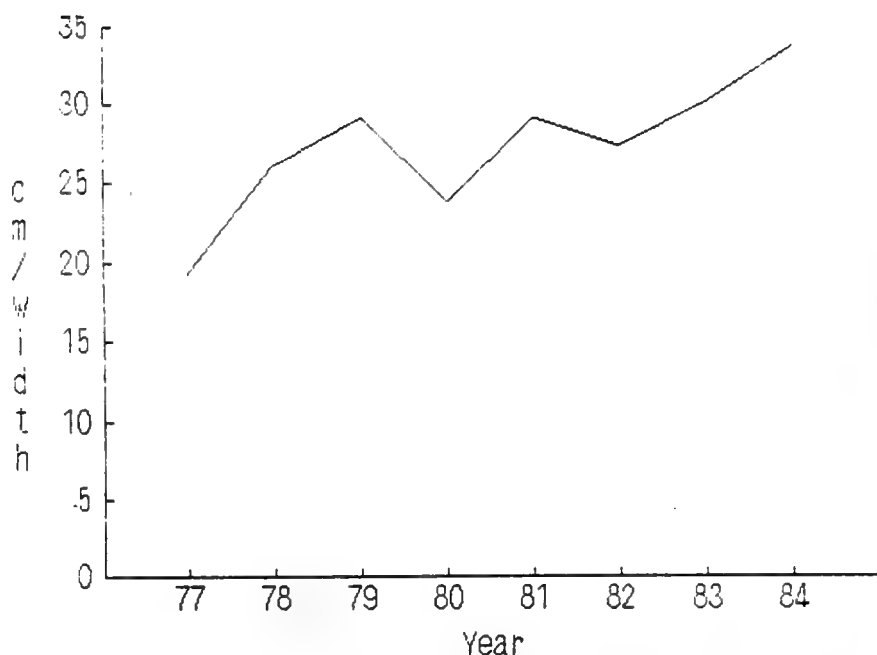


Figure 18: Overall average annual belly width of wet-salted Crocodylus porosus skins.

Source: Dealers' data

Alligator mississippiensis

Restricted to the southern United States, the wild population of A. mississippiensis experienced a period of decline until the 1960s. Subsequent to the introduction of legal protection and sound management practices, populations of the species have gradually made a comeback. Originally placed in Appendix I of CITES, A. mississippiensis was moved to Appendix II in 1979. Exploitation of wild populations and commercial export of skins is strictly regulated under the U.S. Endangered Species Act. Commercial farming and ranching is also practised in Florida and Louisiana (Luxmoore et al, 1985).

Dealers' data by weight

Reflecting the resumption of legal export of skins from the United States, A. mississippiensis appeared in the dealers' data only from 1981 onward (Figure 19). The species rapidly regained a fair share of the Japanese market, displacing both Crocodylus novaeguineae and C. porosus to rank as the second most imported species in 1982 and 1983 (Figure 4). A total of 71 669 kg of skins were imported during the period examined.

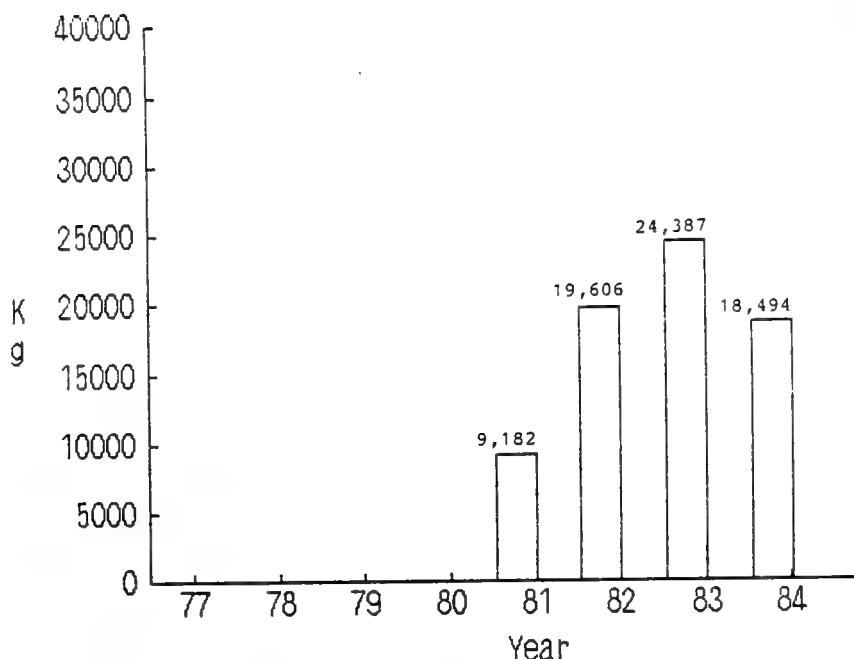


Figure 19: Total imports by weight of Alligator mississippiensis skins (including tanned skin pieces)
Source: Dealers' data

Dealers' data by number of skins

A total of 19 116 wet-salted skins were imported, with trade expanding from a low of 2790 skins in 1981 to a high of 6508 skins in 1983 (Figure 20). An additional 246 tanned skins were imported in 1984.

Sources of skins

Most skins were received from the USA, although 670 kg of wet-salted and 167 kg of tanned skins were declared by dealers as re-exports via France.

Size of skins

The overall average length of A. mississippiensis skins ranged from 6.6 ft (201.2 cm) in 1981 to 6.9 ft (210.3 cm) in 1984. Skins originating in Florida averaged slightly shorter at 6.2 ft (189 cm). An average length of 8.3 ft (253 cm) was reported for the small quantity of wet-salted skins from France (see Countries of origin/Export section).

(x 1,000pcs.)

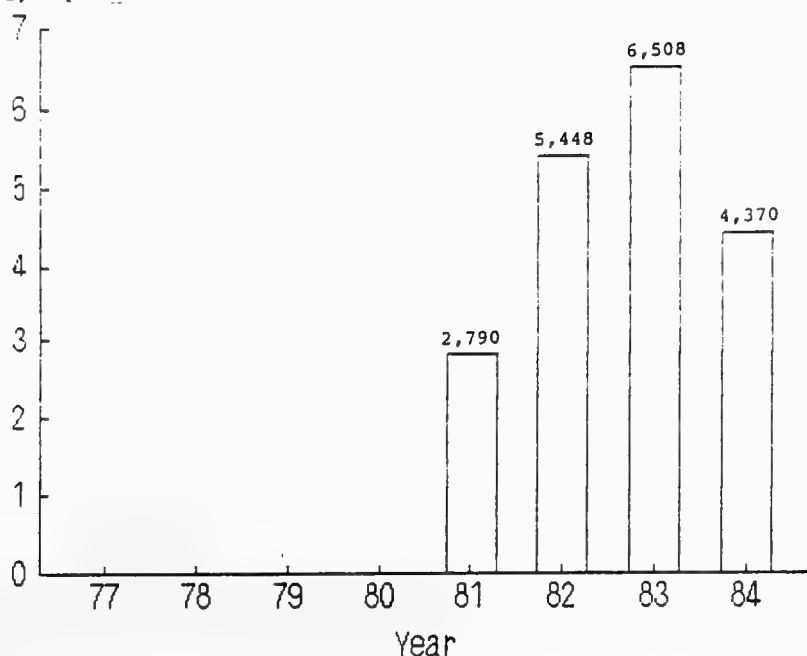


Figure 20: Total number of Alligator mississippiensis skins (excluding tanned skin pieces)

Source: Dealers' data

Crocodylus siamensis

A South East Asian species, Crocodylus siamensis has been extirpated throughout most of its former range. In the recent past, only one viable wild population has been identified in Thailand, although small, isolated groups may still exist elsewhere in the region (Groombridge, 1982). However, a large captive population exists on a commercial farm in Thailand. C. siamensis was listed in CITES Appendix I in 1975, but Thailand placed a reservation on the species when she ratified CITES in 1983. The need for the reservation, however, became redundant in July 1985, with the registration of the captive-breeding facility and it was withdrawn in 1987.

Dealers' data by weight

With strictly limited sources, the species plays a marginal role in the Japanese trade. Nonetheless, wet-salted skins were imported from 1978 to 1982 and in 1984, according to the dealers' data (Figure 21). The total quantity reported amounted to 20 354 kg, corresponding to 3.1% of total crocodilian skin imports by weight reported by the dealers. Imports ranged from 1173 kg in 1981 to a peak of 5642 kg in 1984.

Dealers' data by number of skins

In terms of numbers, 3104 skins were imported (Figure 22). The trade pattern for imports by numbers was slightly different from that for imports by weight. The number of skins imported from Thailand ranged from 200 in 1981 and 1982 to 800 in 1984. These skins possibly represent the total extent of international trade in C. siamensis.

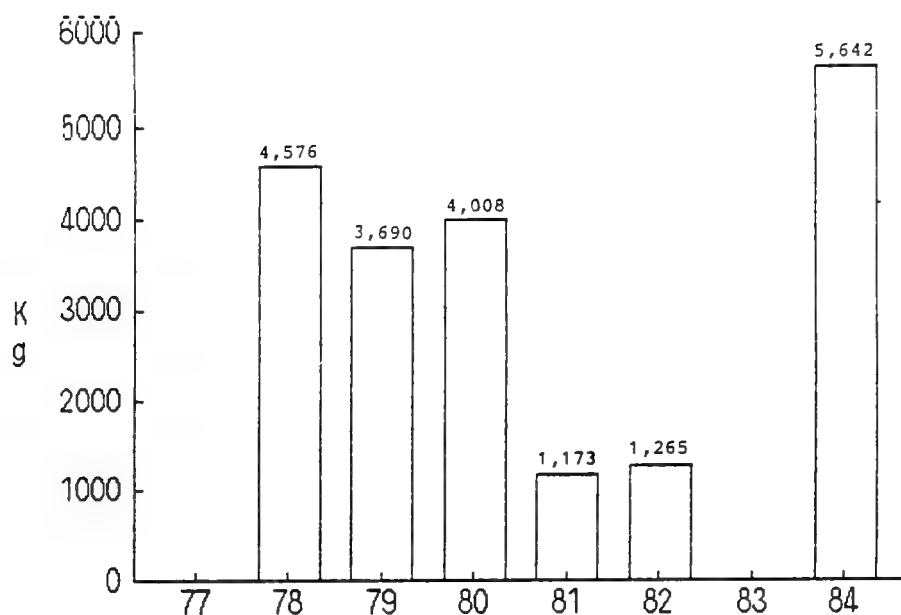


Figure 21: Total imports by weight of Crocodylus siamensis
Source: Dealers' data

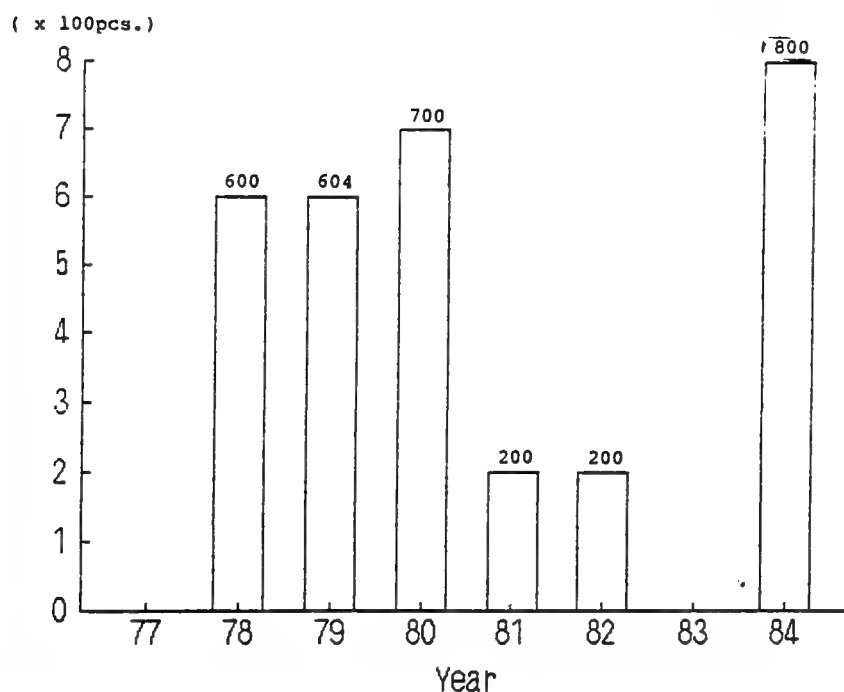


Figure 22: Total number of Crocodylus siamensis skins
Source: Dealers' data

Sources of skins

All skins originating in Thailand and are presumed to represent farmed stock, and the quantities exported are comparable to the farm production reported by Luxmoore et al. 1985.

Size of skins

The annual average width of C. siamensis skins rose slightly from 50.8 cm in 1978 to 53.3 cm in 1984 (see Countries of origin/Export section).

Crocodylus niloticus

Broadly distributed throughout Africa south of the Sahara, the population status of Crocodylus niloticus varies considerably throughout its range (Groombridge, 1982). Originally placed in Appendix I of CITES in 1975, the introduction of export quotas for some countries in 1985, and the recognition of captive-breeding and ranching schemes for others has opened up a variety of trade possibilities, resulting in the downlisting of specific populations to Appendix II. Traditionally a species fundamental to the European trade, very limited and irregular trade with Japan has occurred over the years. A trade mission of Japanese importers to several African nations in 1985, however, may establish new direct trade routes, stimulating future imports to Japan.

Dealers' data by weight

In the dealers' data, a total of 1317 kg of C. niloticus skins was imported during the period examined, corresponding to 0.2% of the total trade. Small volumes were imported between 1977 and 1981, ranging from a low of 20 kg in 1977 to a high of 503 kg in 1981 (Figure 23). Trade resumed in 1984 with the importation of 128 kg.

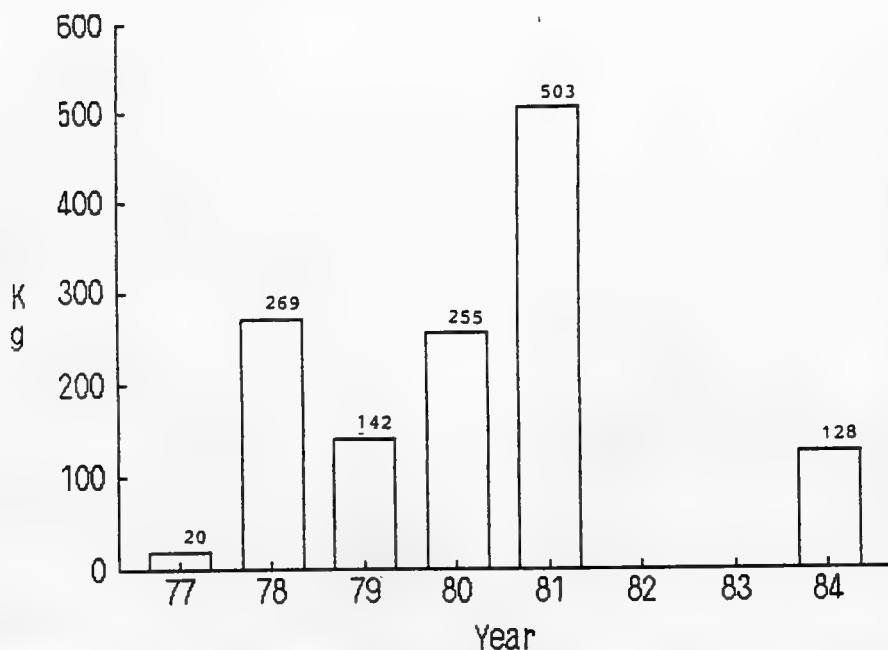


Figure 23: Total imports by weight of Crocodylus niloticus skins (including tanned skin pieces)

Source: Dealers' data

Dealers' data by number of skins

Raw skins were imported in only three years and totalled 475 skins (Appendix 3). Additionally, 4068 tanned skin pieces were received during the period examined.

Sources of skins

Only two African countries were identified by the dealers as countries of origin, namely South Africa, from which 170 kg of raw skins were received in 1978, and Zimbabwe, which accounted for all of the raw skins imported in 1981 and 1984 (Appendix 3).

All imports of tanned skin pieces came from France or Italy, with no countries of origin given.

Size of skins

The average width of the raw skins from South Africa and Zimbabwe measured between 34 cm and 41.6 cm. For the tanned skin pieces imported from France and Italy, the average widths ranged between 20 cm and 24.3 cm (see Countries of Origin/Export section).

Crocodylus cataphractus

Distributed in western and central Africa, Crocodylus cataphractus populations are regarded as threatened in many countries, the decline attributable to excessive hide-hunting (Groombridge, 1982). Listed in Appendix I of CITES in 1975, Austria continues to hold reservations with respect to this species although formerly France, Italy and Zambia also held reservations. Imports of C. cataphractus into Japan have been very limited in the past, according to dealers. The population in Congo was transferred to Appendix II in 1987 under a quota system.

Imports of tanned C. cataphractus skins, all from France, were reported for the years 1977 to 1980 (Figure 35). These imports totalled only 923 kg and represented only 0.1% of the total trade for that period.

The trade totalled 6148 skin pieces. No information was provided on country of origin and there has been no reported trade since then. The yearly average width of C. cataphractus skins ranged from a low of 19.5 cm in 1979 to a high of 23.5 cm in 1978 (see Countries of origin/Export section).

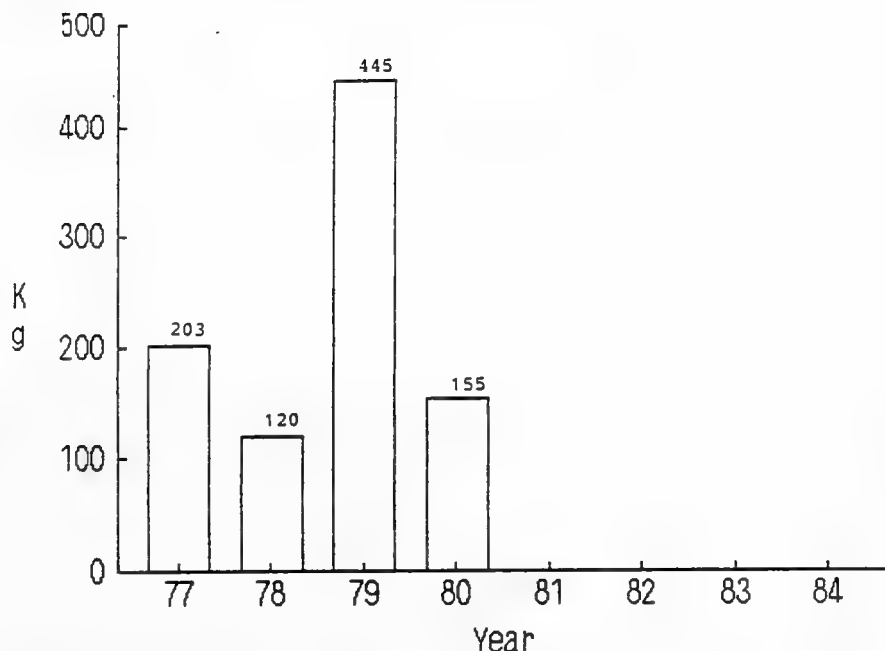


Figure 24: Total imports by weight of Crocodylus cataphractus (all tanned skin pieces)

Source: Dealers' data

Melanosuchus niger

Formerly widely distributed throughout the Amazon basin, Melanosuchus niger is now depleted or absent from large areas of its former range (Groombridge, 1982). Now generally protected in range countries through domestic wildlife legislation, internationally the species has been listed in CITES Appendix I since 1975. Although considered to be the prized species in the South American skin trade, M. niger plays an extremely limited role in the Japanese trade.

Japanese dealers reported trade in M. niger only during two years. In 1977, 20 kg of tanned skins were imported via Hong Kong. This trade numbered 152 skins and originated in Paraguay. The following year 806 kg of dry-salted skins were received from France, but declared as having originated in Suriname. These imports totalled 516 skins. Overall, trade in the species amounted to a meagre 0.1% of total imports by weight for the period. The Paraguayan skins averaged 31 cm in width. Suriname skins were measured in length and averaged 152.4 cm (see Countries of origin/Export section). (Other skins reported in the data as wet-salted Caiman c. crocodilus from Paraguay could have also represented this species, according to some dealers.)

COUNTRIES OF ORIGIN/EXPORT

Latin America and the Caribbean Overview

In terms of sheer volume, South America has been the major source of crocodilian skins for Japan. On the basis of Customs data, since 1977, no less than 55% of Japan's annual total imports by weight have originated in Latin American or Caribbean countries (Figure 3).

By far the biggest individual supplier of skins was Paraguay (Figure 25). However, a wildlife export ban has been in effect in Paraguay since 1975 and the CITES Management Authority has not issued any permits since 29 July 1982. The development of Paraguay as a major source of skins for Japan only began in 1977, two years after the ban on hunting and exporting of wildlife became effective. Therefore, the bulk of the Japanese trade through 1984 was dependent upon a legally closed supply.

The second major source of skins for Japan has been Colombia. From 1970 through 1973, Colombia was the biggest supplier in South America, but its importance rapidly declined as Paraguay's increased (Figure 25).

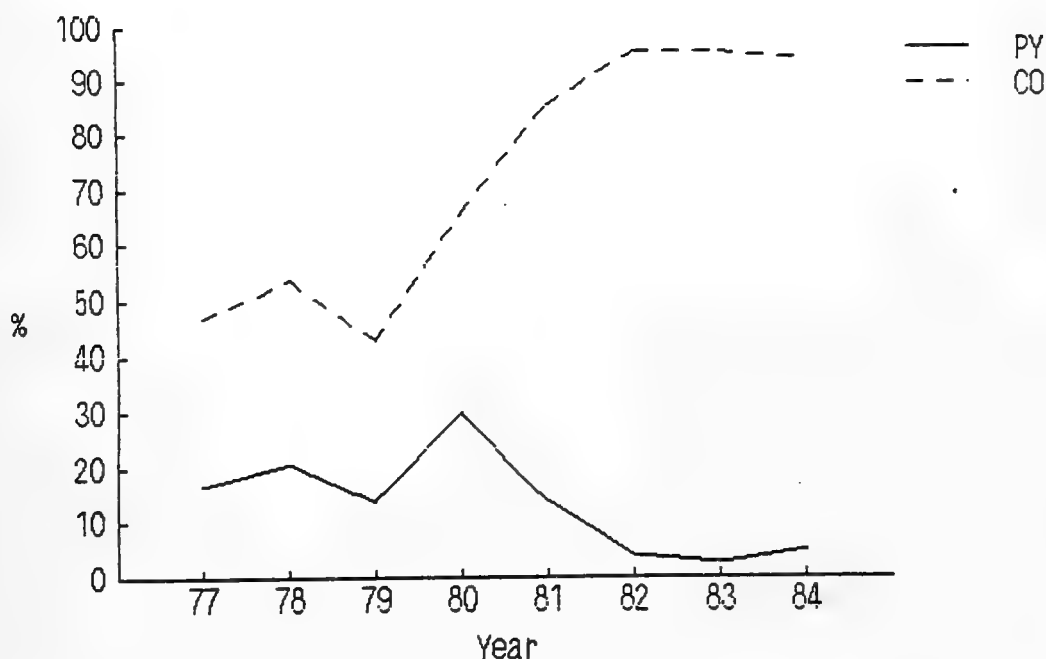


Figure 25: % of total Latin America/Caribbean imports by weight originating from Paraguay and Colombia

Source: Japanese Customs statistics

(In April 1985, new regulations entered into effect in Japan which required CITES export permits instead of country of origin certificates, which previously had been considered sufficient documentation by government authorities. Since implementation of the new regulations, reported imports from Paraguay apparently have ceased. With the halt in imports from Paraguay in mid-1985, imports from Colombia have more than doubled in volume compared with the levels reported from 1982 to 1984, according to Customs data, and represent 14% of Japanese imports from South America in 1985.)

Japanese Customs data show sporadic, but sizeable imports of crocodilian skins from other Latin American countries and the Caribbean, for example: 11 136 kg from Panama in 1977; 29 870 kg from Suriname and 15 785 kg from Netherlands Antilles in 1979. The sudden nature of both the appearance and disappearance of such trade suggests either opportunistic exploitation of populations or inadequate regulatory controls. The Netherlands Antilles, for example, do not have commercially viable populations of crocodilians (Groombridge, pers. comm.), thus the skins must have originated elsewhere.

Crocodilian leather has also been imported in sizeable amounts from South America, principally from Bolivia and Paraguay, according to the dealers, but Honduras also appeared in the Customs statistics as a source of skins.

Argentina

In 1979, dealers report the import of 168 kg of tanned Caiman crocodilus crocodilus, representing 3333 skin pieces, from Argentina. Customs data show the import of 188 kg in 1978 and 168 kg in 1979, the latter in complete correlation with the dealers' data. The skins reported by the dealers averaged 150 cm in length, but varied from 100 cm to 270 cm (Appendix 5). Based on these data, it does not appear that Argentina has been a major supplier of crocodilian skins to Japan.

Bolivia

Imports of tanned Caiman crocodilus crocodilus skins from Bolivia are reported in the dealers' data from 1977 to 1982. These imports totalled 5362 kg by weight and numbered 64 367 skin pieces (Figures 26 and 27). The size range of these skins remained fairly constant throughout the period with a minimum length of 100 cm and a maximum of 230 cm. Yearly averages ranged from 151.4 cm to 160 cm in length (Appendix 5).

By weight, Customs data for crocodile leather imports showed a peak in 1980 following three years of growth and preceding three years of decline. The dealers' data showed a peak of 27 240 skins from Bolivia in 1979 and no trade since 1983. Customs also reported the import of 1600 kg of raw skins in 1977, but there was no corresponding report from the dealers (Appendix 1).

The correlation between the Customs statistics for imports of crocodilian leather and the dealers' data was poor with the exception of 66.9% correlation in 1979 (Figure 26). It is also worth noting that the skins were all described as C.c. crocodilus, a subspecies which probably does not occur in exploitable numbers in Bolivia (King, pers. comm.).

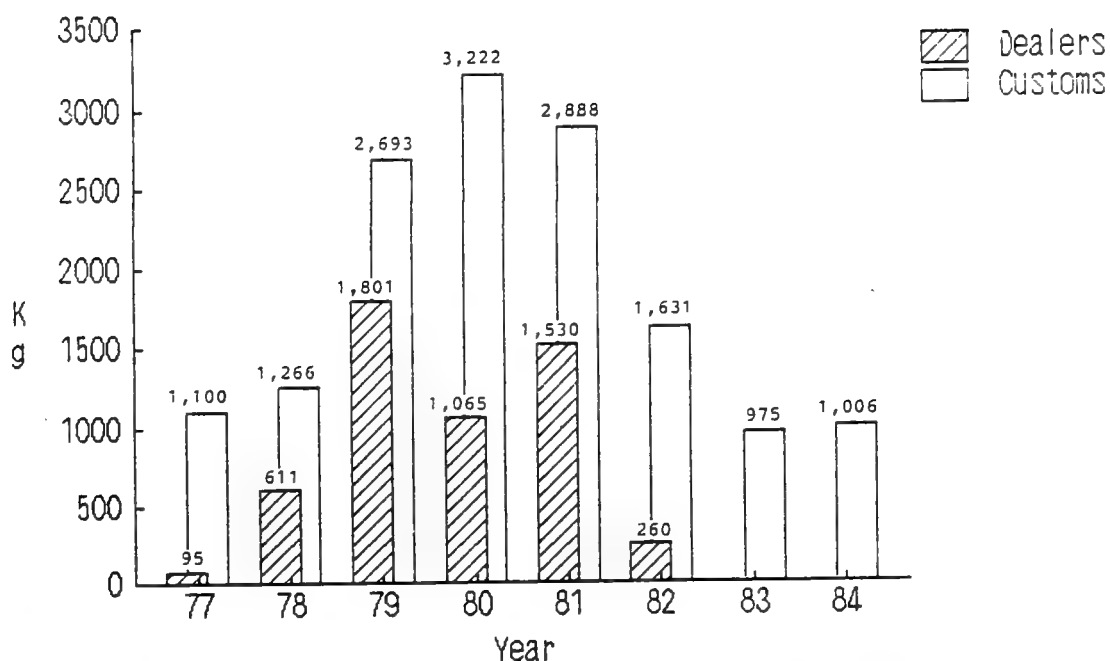


Figure 26: Total imports by weight of tanned skin pieces from Bolivia
Source: Japanese Customs statistics/Dealers' data

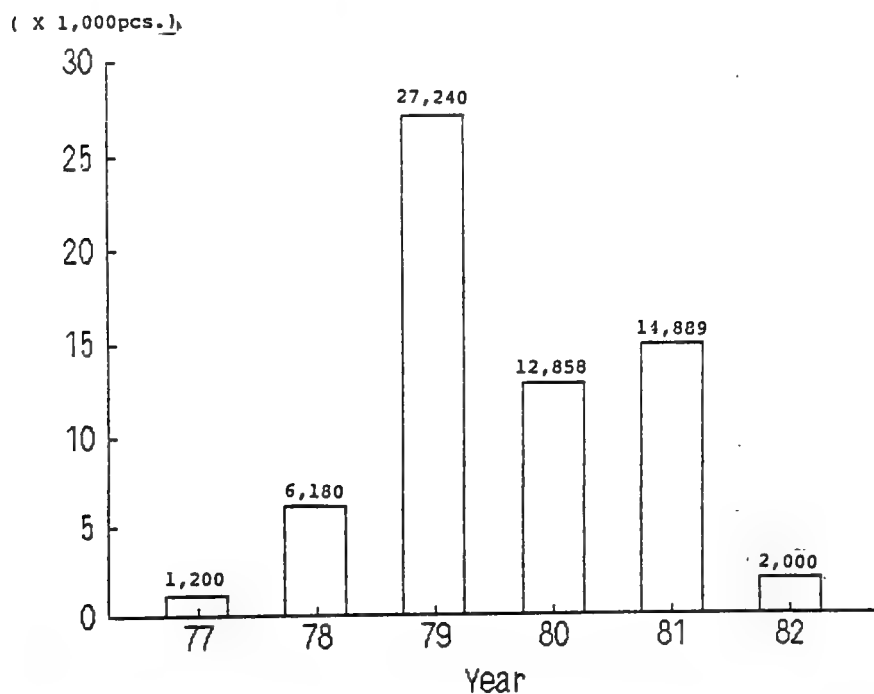


Figure 27: Total number of tanned skin pieces of Caiman crocodilus from Bolivia
Source: Dealers' data

Colombia

Wet- or dry-salted Caiman crocodilus crocodilus skins were imported from Colombia every year, according to the dealers. The trade totalled 39 945 kg and represented 456 635 skins (Figures 28 and 29). The trade pattern for imports by number of skins was similar to that for imports by weight, but it is clear that the average size of skins fluctuated with a general trend toward progressively smaller skins.

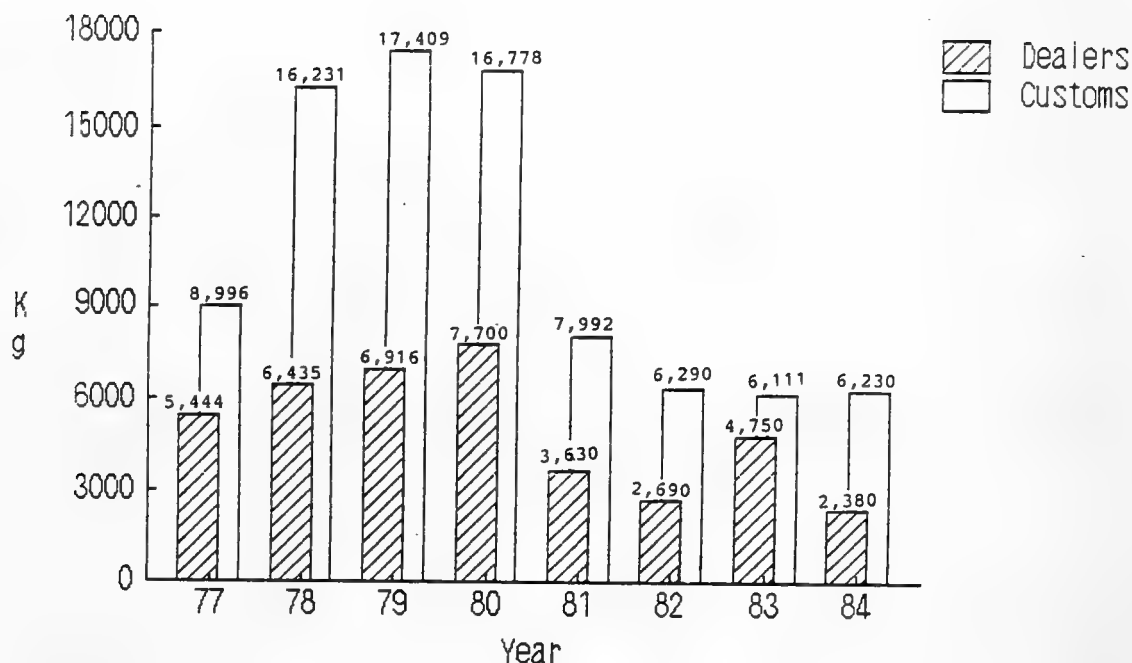


Figure 28: Total imports by weight from Colombia

Source: Japanese Customs statistics and dealers' data

Both Customs and dealers' data show a steady growth in imports from Colombia from 1977 through 1979, followed by a substantial drop in 1981. The correlation with the Customs data was best in 1983 at 77.7%, but generally remained around 40% (Figure 28). Although Customs data also showed imports of crocodilian leather from Colombia, there was no corresponding report of any leather imports by the dealers.

With the exception of 350 kg in 1981 and 275 kg in 1984, all the skins were dry-salted and in each year the minimum length was 16 in (40.6 cm). Average lengths for the entire period varied between 19.6 in and 24.1 in (49.8 cm and 61.2 cm), with the maximum reported length ranging from 32 in (81.3 cm) in 1982 and 1983 to 50 in (127 cm) in 1979 and 1980 (Appendix 5).

(x 1,000pcs.)

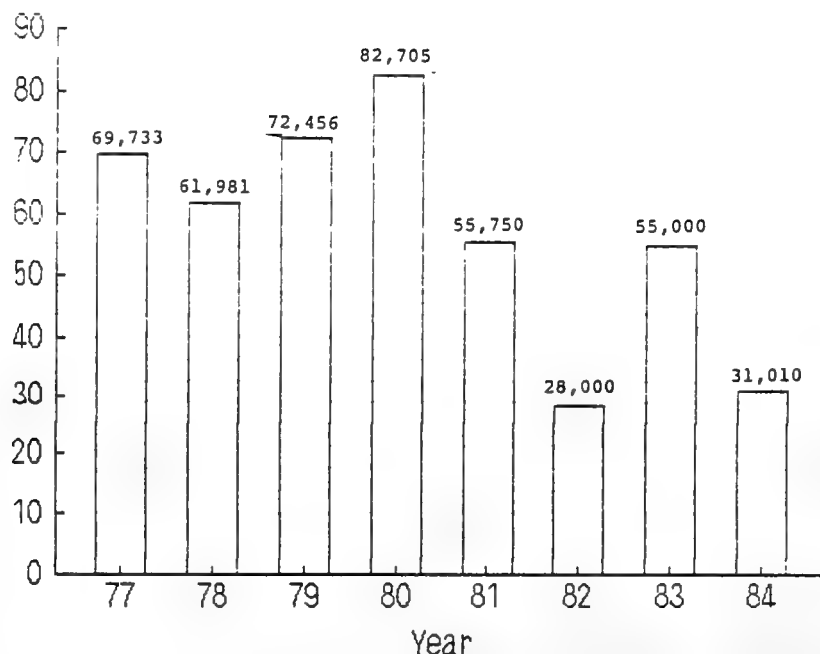


Figure 29: Total number of Caiman crocodilus skins from Colombia
Source: Dealers' data

Colombia's role in the trade is hard to assess from a legal standpoint. Although hunting of caimans has been restricted for some time, selected companies were allowed to export inventoried stocks until 1984. Since then, all exports have been banned. Poor enforcement of protection laws has resulted in abuse of export restrictions (Donadio, 1982). Presently, Japanese dealers believe that much of the trade from Colombia actually represents skins acquired from the upper Amazon region of Brazil, since local Caiman populations are depleted (Groombridge, 1982).

Netherlands Antilles

A total of 16 765 kg of dry-salted Caiman crocodilus crocodilus skins was imported from the Netherlands Antilles according to the dealers' data, with over 90% of the trade occurring in 1979 (Figure 30). The number of skins from the Netherlands Antilles fluctuated from 9128 skins in 1978 to 84 551 skins the following year. In 1980 the figure dropped to 18 125 skins.

Skin sizes in the three years for which there was data ranged from a minimum of 18 in (45.7 cm) in length to a maximum of 39 in (99.1 cm), with respective annual averages of 21 in (53.3 cm), 25 in (63.5 cm), and 20 in (50.8 cm) (Appendix 5).

In comparison, Customs data showed substantially more trade in 1977 and 1978, but in 1979 and 1980 the correlation was 96.5% and 100% (Figure 30).

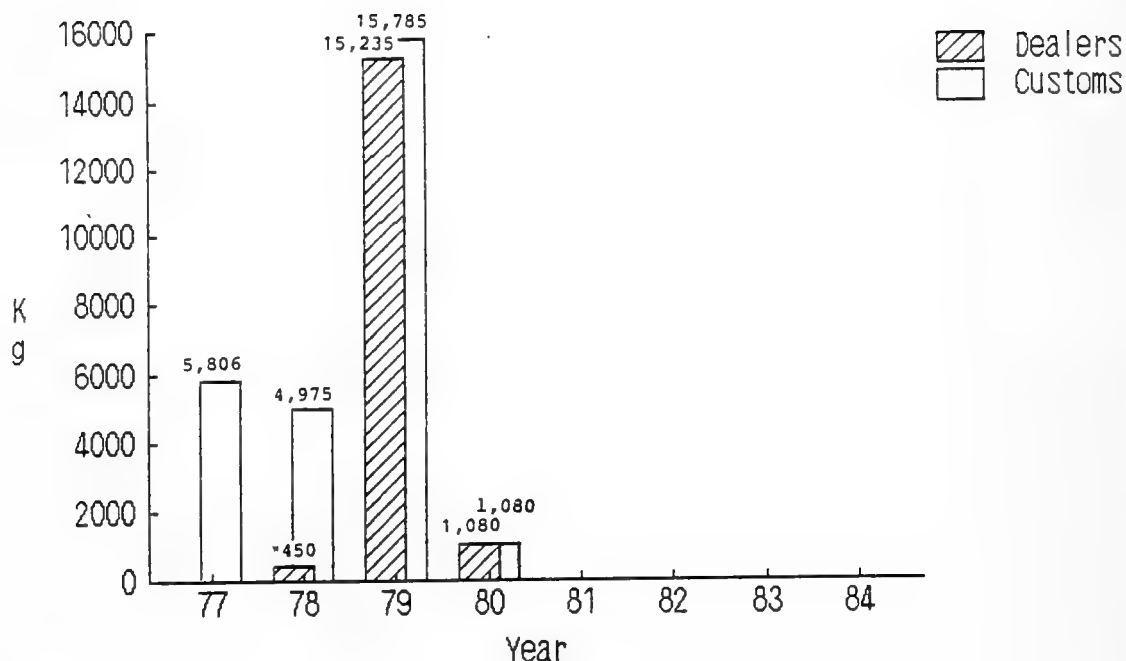


Figure 30: Total imports by weight from the Netherlands Antilles

Source: Japanese Customs statistics/Dealers' data

The irregular but substantial imports from the Netherlands Antilles, particularly as C.c. crocodilus does not occur in the islands, suggests trans-shipment of skins from elsewhere, some of which could have been illicit. Several sources thought that these skins probably came from the Brazilian Amazonia, Venezuela or Colombia.

Panama

The dealers' data showed the import of tanned Caiman crocodilus crocodilus skins from Panama via F.R. Germany in 1980, the only record of any trade with Panama (Figure 31). These imports weighed 230 kg and represented 1645 skin pieces, with a minimum length of 115 cm, a maximum length of 270 cm and an average size of 150 cm (Appendix 5). Customs statistics also show imports of crocodilian leather from Panama from 1977 through 1980, as well as imports of raw crocodilian skins in 1977, and 1980 (Figure 32).

Clearly the correlation between the data supplied by the dealers and the Customs statistics is very poor. Furthermore, it should be noted that C.c. crocodilus does not occur in Panama; the skins were either misidentified C.c. fuscus or were not of Panamanian origin.

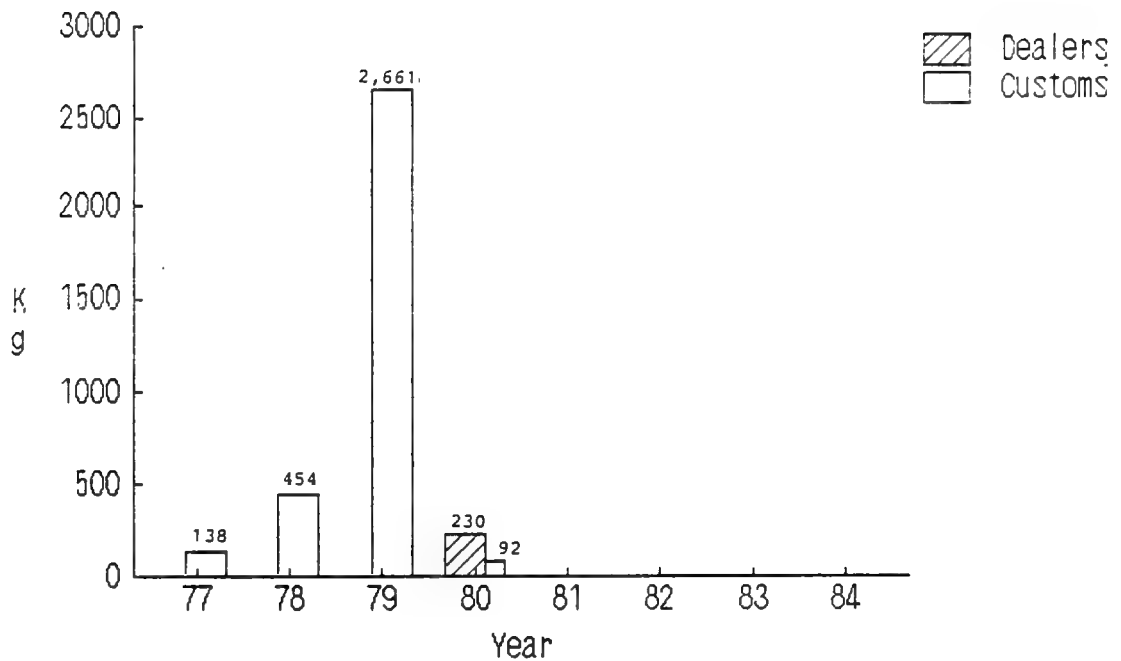


Figure 31: Total imports by weight of crocodilian leather from Panama
Source: Japanese Customs statistics/Dealers' data

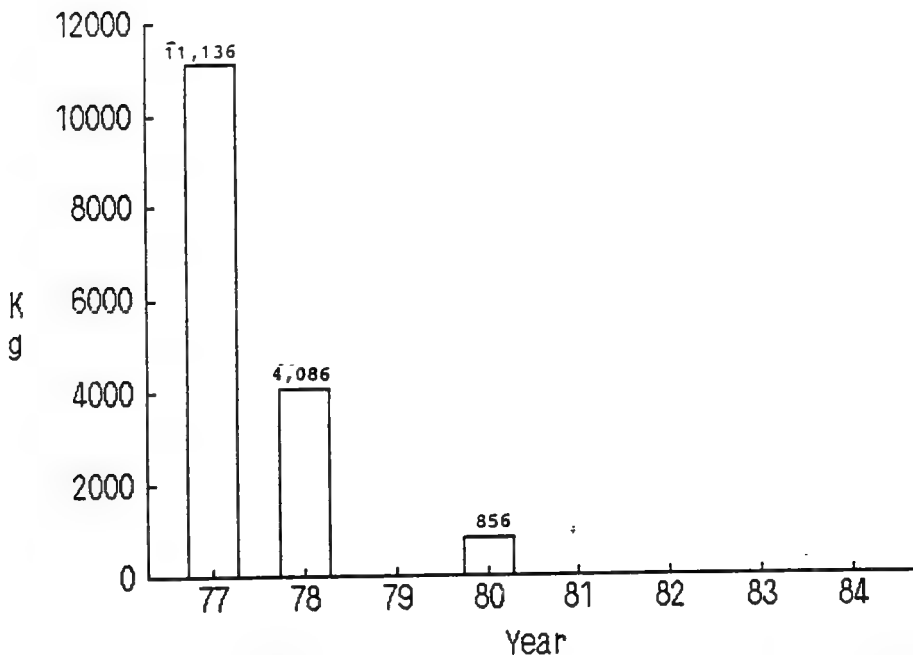


Figure 32: Total imports by weight of raw crocodilian skins from Panama
Source: Japanese Customs statistics

Paraguay

Both the Customs statistics and the data provided by the Japanese importers show Paraguay to be the major supplier of dry- and wet-salted Caiman crocodilus skins to Japan. According to the dealers, these imports totalled 326 758 kg. Both sets of data showed a substantial jump in import levels by weight in 1982 (Figure 33). Correlation between the two sets improved from 6.7% in 1977 to 72.6% in 1984.

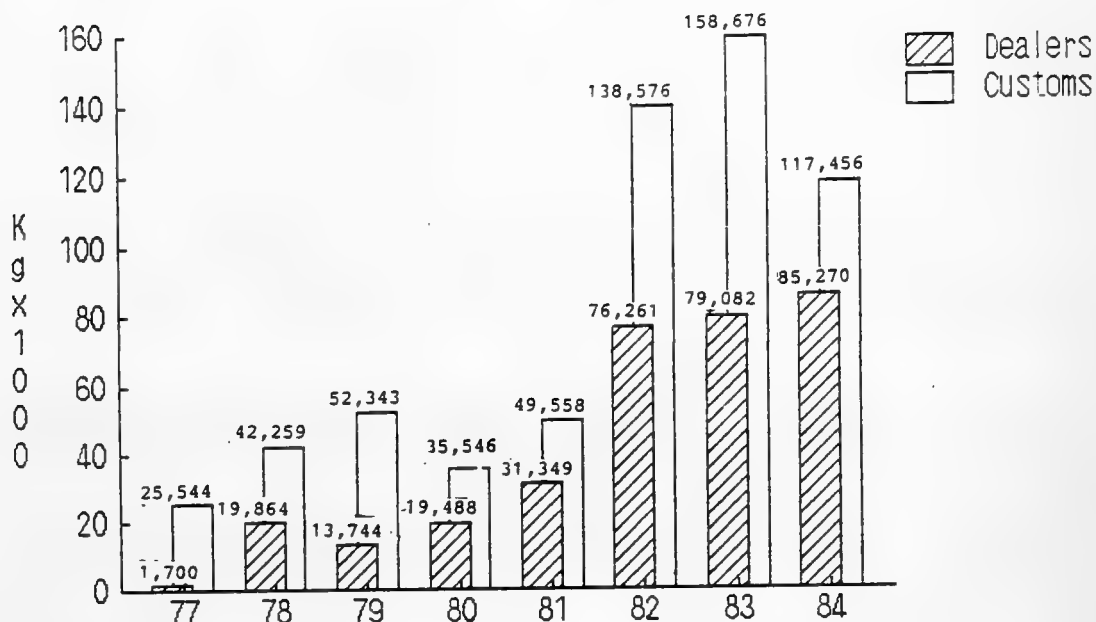


Figure 33: Total imports by weight of raw skins from Paraguay

Source: Japanese Customs statistics/Dealers' data

A total of 765 433 raw skins were reported by the dealers, ranging from 1000 skins in 1977 to 196 742 skins in 1983 (Figure 34). According to the data supplied by the dealers, both C.c. crocodilus and C.c. yacare were imported and some imports were received via Argentina and Uruguay. C.c. crocodilus skins were either dry- or wet-salted, but all C.c. yacare skins were wet-salted. Caiman skins, which are considerably less valuable than classic crocodilian skins, are usually shipped dry-salted in order to keep costs low. It is therefore surprising that considerable quantities of wet-salted C.c. yacare skins were reported from 1978 through 1984.

The average length of the C.c. crocodilus skins received directly from Paraguay ranged from 100.8 cm in 1978 to 171.1 cm in 1983 with both the smallest and the largest skins reported in 1981, 55 cm and 340 cm respectively. The largest size apparently represents an aberration in the data as the maximum size in other years was 280 cm (Appendix 5).

(x 10,000pcs.)

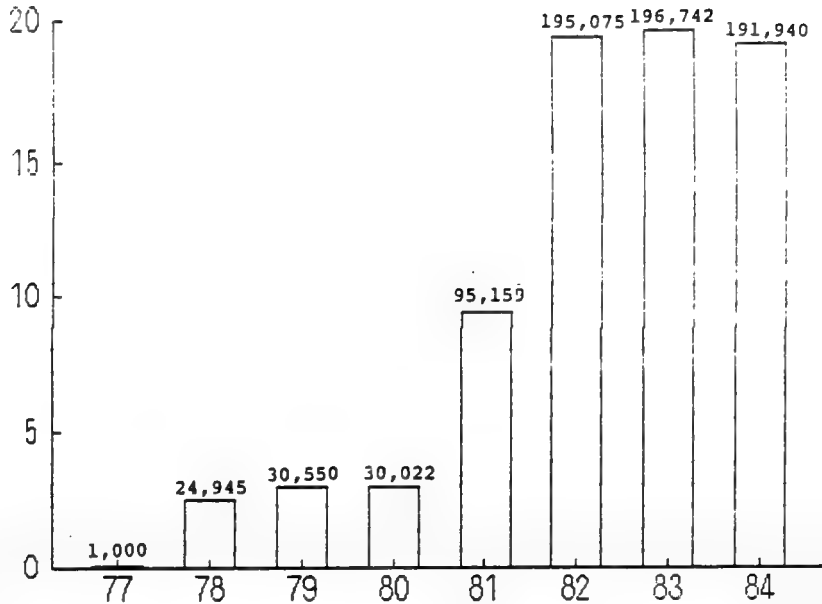


Figure 34: Total number of raw Caiman crocodilus skins from Paraguay
 Source: Dealers' data

The average length of the C.c. yacare skins ranged from 162.2 cm in 1979 to 205.8 cm in 1978. The maximum length of skin in every year was 270 cm and the minimum ranged from 115 cm to 150 cm (Appendix 5). The average width of skins ranged from 87.8 cm in 1981 to 112.1 cm in 1978. Minimum widths ranged from 50 cm to 75 cm and maximum widths were from 125 cm to 200 cm in 1978 (Appendix 6), a significantly bigger width than recorded in any other year remembering that the maximum length remained 270 cm.

Tanned skin pieces, which totalled 164 912 Caiman crocodilus skin pieces and 152 Melanosuchus niger skin pieces, were imported from 1977 to 1982 in the dealers' data. Customs statistics also showed imports of crocodile and alligator leather from Paraguay in 1983 and 1984 (Figure 35). Correlation with Customs totals was quite good in 1979 to 1981, but deteriorated from 1982 onwards. The M. niger skins weighed 20 kg, had an average width of 31 cm (Appendix 6), and were imported in 1977 via Hong Kong. All other tanned skins were described as Caiman c. crocodilus.

During the period examined, Paraguay was Japan's biggest supplier of crocodilian skins, despite the fact that exports have been banned since 1975. Dealers indicated that most skins imported from Paraguay come from the Mato Grosso region of south-west Brazil. If so, the trade would probably represent yacare rather than crocodilus skins.

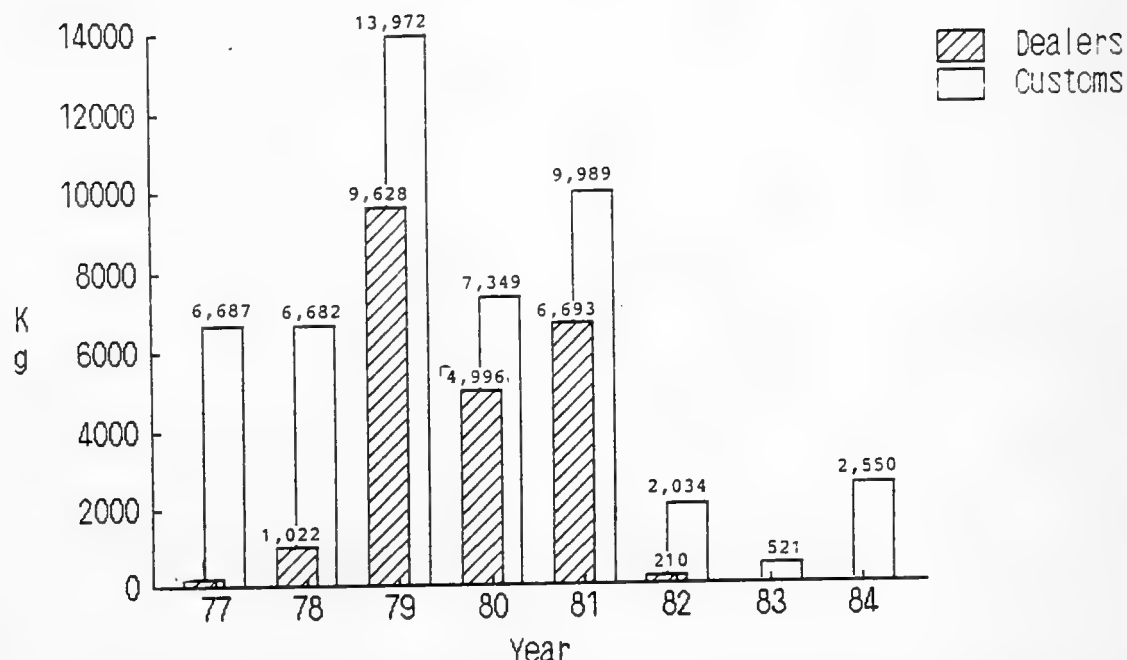


Figure 35: Total imports by weight of tanned skins/leather from Paraguay

Source: Japanese Customs statistics/Dealers' data

Peru

Dry-salted Caiman crocodilus crocodilus skins were imported from Peru only in 1978, both the dealers' data and the Customs statistics showing a figure of 1445 kg. The 10 000 skins ranged in length from 21 in to 39 in (53.3 cm to 99.1 cm), with an average of 26 in (66 cm) (Appendix 5).

Suriname

The only trade reported from Suriname came via France in 1978 and represented 516 dry-salted Melanosuchus niger skins. The skins totalled 806 kg and ranged from 4 ft to 6 ft (121.9 cm to 182.9 cm) in length (Appendix 5). However, Customs data show the import of 1606 kg of skins from Suriname in 1978 (possible correlation of 50% with the dealers' data), followed by 29 870 kg in 1979 and nothing since (Appendix 1). As with the Netherlands Antilles, the sudden appearance and disappearance of a substantial trade suggests a brief intense exploitation of a wild population or a legal loophole.

Venezuela

The data supplied by the dealers showed the import of 800 kg of raw Caiman c. crocodilus skins in 1978. The number of skins totalled 579 and had a minimum length of 180 cm and a maximum of 270 cm (with no average recorded) (Appendix 5). Customs statistics showed 98 kg in 1977 and 2224 kg in 1978 (correlation of 36%) (Appendix 1). These data indicate that Venezuela was not a major supplier of skins to Japan during the period examined.

Other Latin America/Caribbean countries

Two other South American countries are reported in the Customs statistics which are not included in the dealers' data. In 1977 and 1978, Guyana was the source of 230 kg and 879 kg of raw crocodilian skins respectively. More significantly, French Guiana appeared in the data as the country of origin for 4472 kg and 5832 kg of skins in 1978 and 1979 (Appendix 1).

North America overview

The sudden availability of Alligator mississippiensis has opened up a new source of supplies which Japan has been quick to exploit. The growth of imports from the USA since 1979 has been rapid and, with one year's exception, consistently large. According to the dealers, Alligator skins combine the useful attribute of Caiman skins of larger body lengths relative to width, with the superior quality of Crocodylidae species. However, the market is reportedly limited and nearly at capacity levels now, according to Japanese dealers.

United States

The dealers reported imports of wet-salted Alligator mississippiensis skins from 1981 onwards. According to the Customs data, Japan began importing skins from the USA in 1979, following transfer of the species from Appendix I to Appendix II of CITES. Imports from the USA have increased from nothing in 1978 to a peak of 26 036 kg in 1983 according to Japanese Customs data (Figure 36).

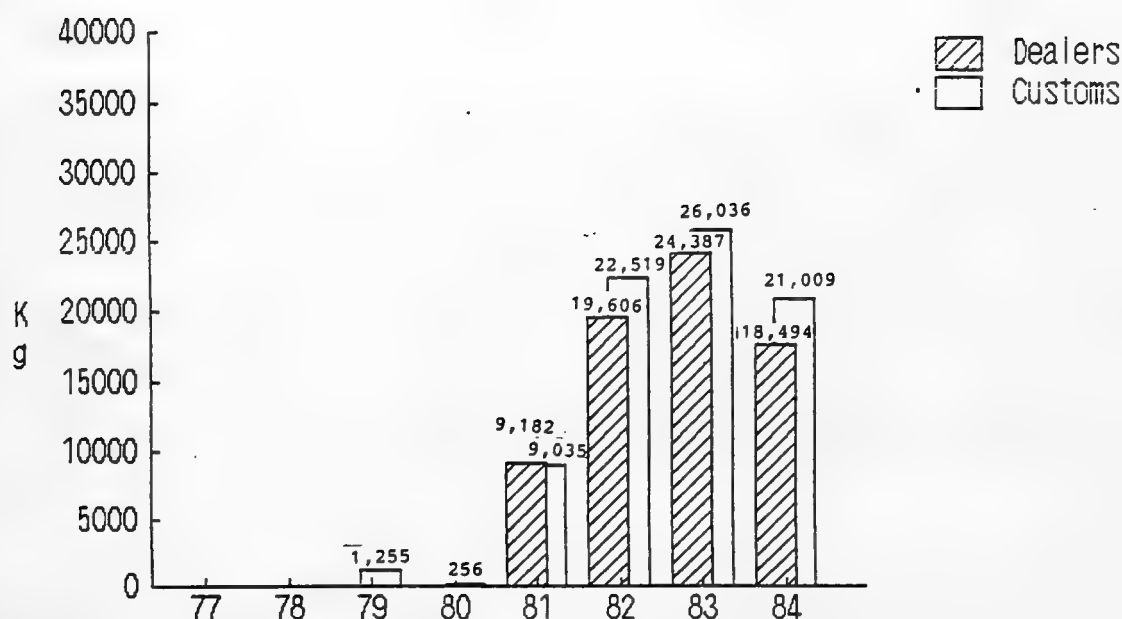


Figure 36: Total imports by weight of skins from the USA
Source: Japanese Customs statistics/Dealers' data

Dealers reported imports totalling 71 669 kg and representing 19 362 skins from 1981 to 1984. Correlation between Customs data and the data supplied by the dealers was very good for those years (Figure 36) and presumably the absence of dealers' data in 1979 and 1980 was due to the absence of response from the importers concerned. In 1981, dealers reported importing 147 kg more than the Customs figure.

With the exception of 6650 kg from Florida in 1984, all direct imports from the USA reportedly originated in Louisiana. The minimum length in each year was 4 ft (121.9 cm), the maximum in 1981 was 12 ft (365.8 cm), but 13 ft (396.2 cm) in all other years (Appendix 5). The average length of skins ranged between 6.6 ft and 6.8 ft (201.2 cm and 207.3 cm).

An additional 670 kg of wet-salted skins and 167 kg of tanned A. mississippiensis were also reported by the dealers as imports from the USA via France in 1984. The wet-salted skins were exceptionally large, averaging 8.3 ft (253 cm) (Appendix 5), while the tanned pieces had an average width of 48 cm (Appendix 6).

Asia and Oceania overview

Although Japan's total imports of crocodilian skins have risen sharply, imports from Asia and Oceania have remained proportionally small (Figure 56), despite the availability of at least two commercially attractive species and the inherent advantage conferred by Japan's proximity to the countries of origin. This is probably the result of several factors, chief amongst them that Asian stocks for the most part have been severely depleted (Groombridge, 1982) and that the classic skins which they produce represent the higher priced end of the Japanese market where consumer demand is more limited.

Two species, C. porosus and C. novaeguineae, are involved in the vast majority of the trade although C. siamensis skins are imported from Thailand. C. porosus is regarded by Japanese dealers as a particularly high quality skin and represents the top end of the market both in terms of price and prestige. Items made of C. porosus will cost between 30% and 50% more than similar items made of C. novaeguineae, although the latter is also highly regarded.

The principal suppliers have been Papua New Guinea and Indonesia, although significant amounts have been imported from Singapore, Thailand and Malaysia. Imports from the Solomon Islands have been relatively large since 1982 and the consistent appearance of trade from the Philippines is worth mentioning as the endangered endemic subspecies C.n. mindorensis is found there and could be affected by the trade.

Among the principal traders, Papua New Guinea was the largest single contributor of skins by weight for the region in most years from 1977 to 1984, although Indonesia also provided substantial quantities of skins particularly in recent years (Figure 37). Singapore was also the reported source of large numbers of crocodile skins, particularly in 1977 and 1980. Imports from Thailand were sporadic but quite sizeable in 1979 and 1984 (Appendix 1).

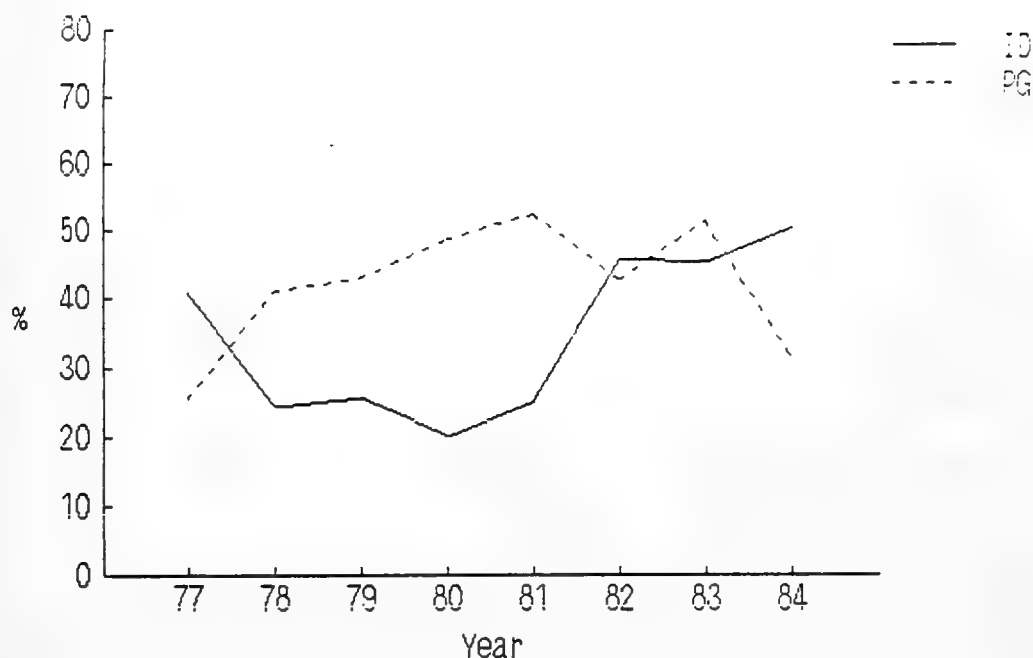


Figure 37: % of total Asia/Oceania imports by weight from Papua New Guinea and Indonesia

Source: Japanese Customs statistics

Indonesia

Two species have been imported from Indonesia, Crocodylus porosus and C. novaeguineae. The dealers reported quantities of wet-salted skins of both species in every year. It is apparent from the outset that the trade patterns of skins from Indonesia are complex as dealers report importing skins direct from Indonesia, from Indonesia via Singapore and from Singapore via Indonesia. For the purposes of this analysis, skins direct from Indonesia and from Indonesia via Singapore are combined. Those skins which were described by the dealers as originally from Singapore but imported via Indonesia were treated as of Singapore origin, although it is very possible that they in fact originated in Indonesia. The dealers reported a total of 24 869 kg of skins, with over half of the trade occurring in 1984 (Figure 38).

Comparison of Customs data and dealers' reports showed a wide discrepancy in the volumes reported, indicating that there is a considerable volume of skins which is unaccounted for. Correlation was below 30% for all years except 1984 (Figure 38).

Although both species are imported from Indonesia, the total volume of trade in C. novaeguineae was greater. Imports by weight of wet-salted C.n. novaeguineae skins increased from under 600 kg annually between 1977 and 1980 to 9940 kg in 1984 (Figure 39). Imports of C. porosus skins fluctuated between 59 kg in 1977 and 3587 kg in 1984 (Figure 40).

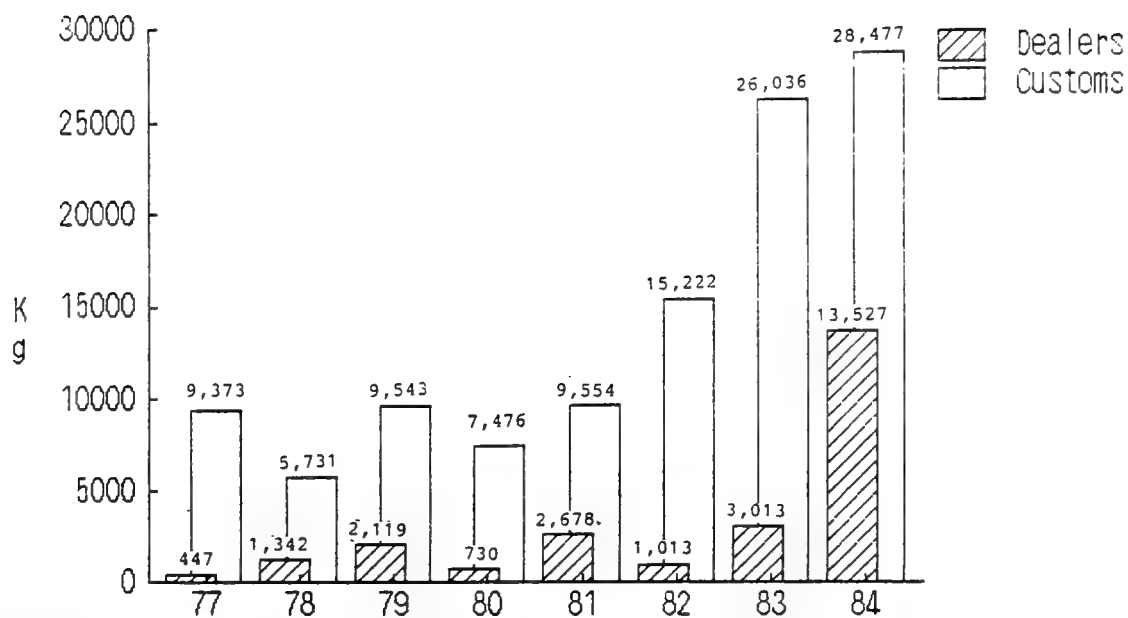


Figure 38: Total imports by weight of skins from Indonesia
Source: Japanese Customs statistics/dealers' data

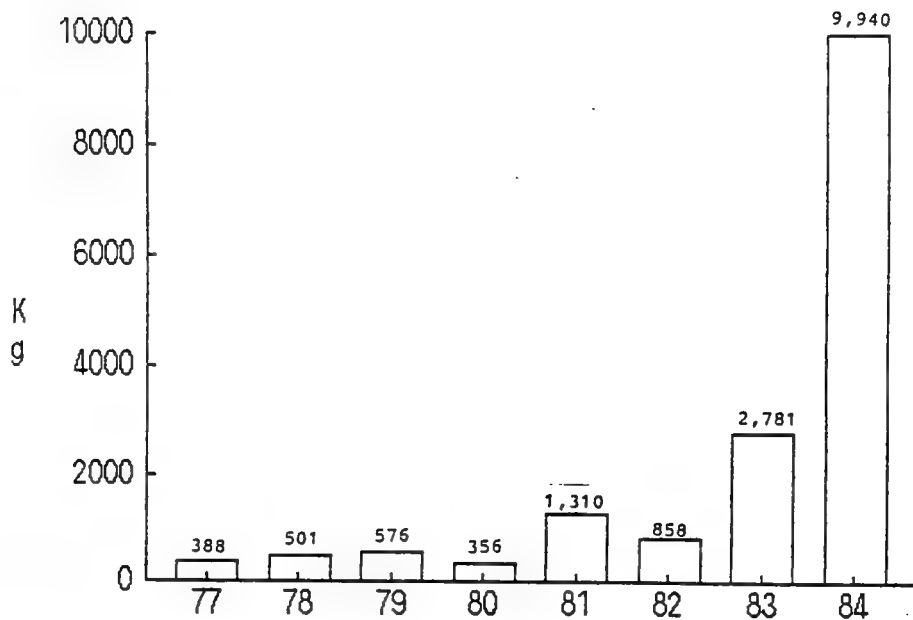


Figure 39: Imports by weight of wet-salted *Crocodylus novaeguineae* skins from Indonesia
Source: Dealers' data

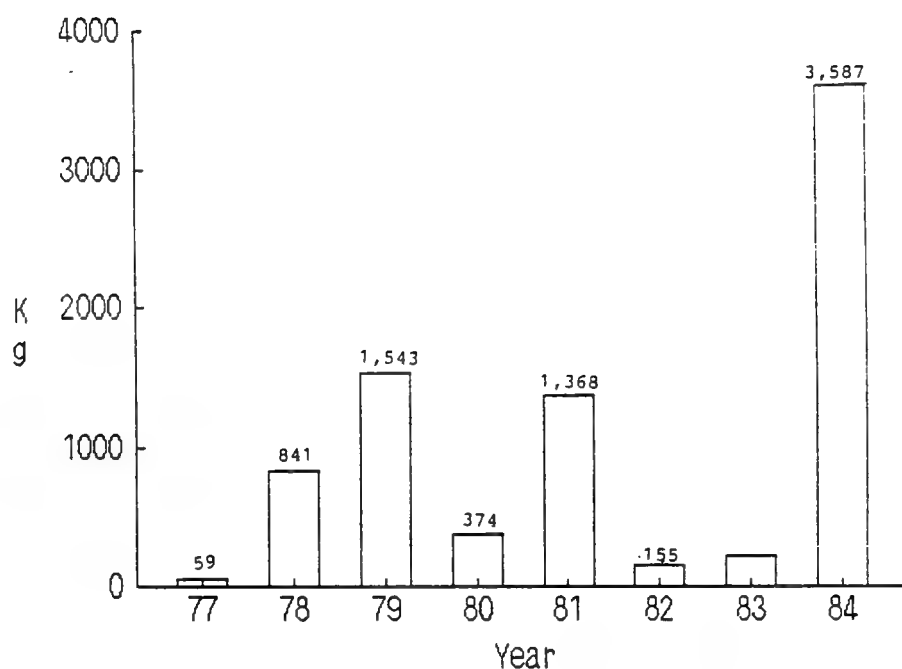


Figure 40: Imports by weight of wet-salted Crocodylus porosus from Indonesia
Source: Dealers' data

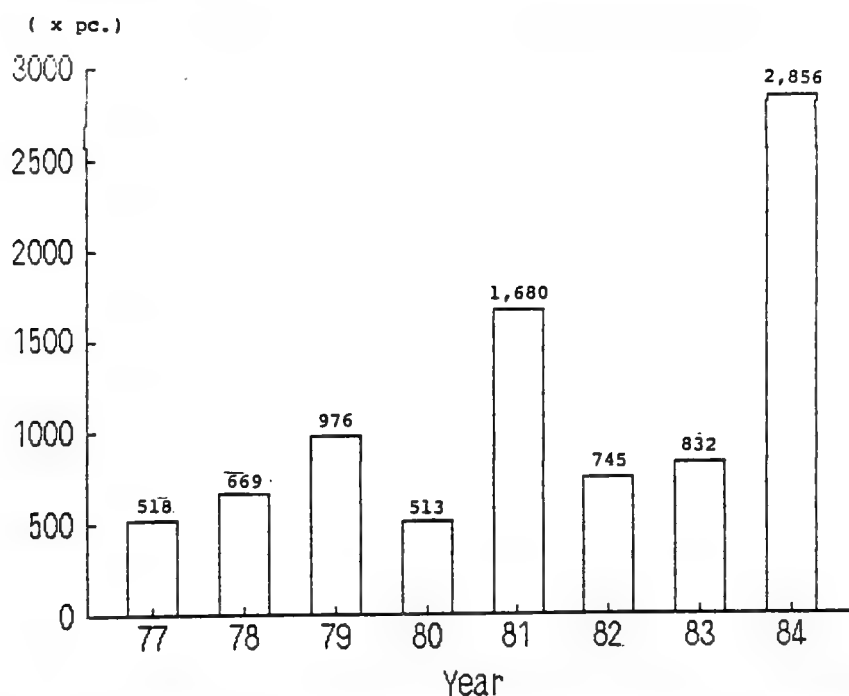


Figure 41: Total number of Crocodylus novaeguineae skins from Indonesia
Source: Dealers' data

The trade represented a total of 8789 C. novaeguineae skins (Figure 41) and 7196 C. porosus skins (Figure 42). The trends were similar to those for the trade by weight, except that the number of C. porosus skins imported declined in 1981.

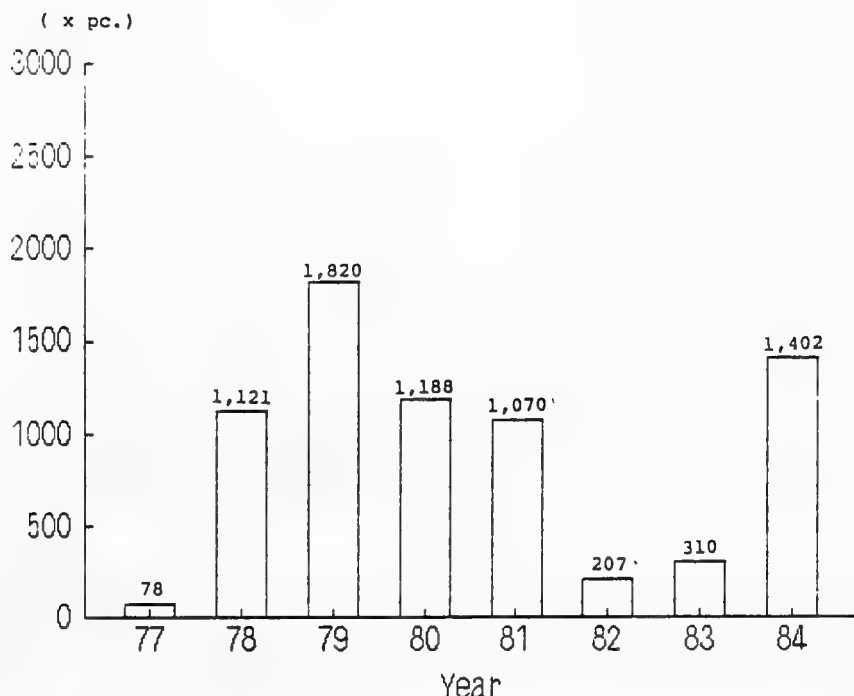


Figure 42: Total number of Crocodylus porosus skins from Indonesia

Source: Dealers' data

Comparing the two species by number of skins, imports of C. porosus were greater from 1978 to 1980. In 1981 the pattern reversed itself and the number of novaeguineae skins in trade from Indonesia were approximately double the number of porosus.

C. novaeguineae skins directly from Indonesia averaged between 26.9 cm and 39.6 cm in width, but the minimum widths ranged between 10.2 cm in 1977 and 25.4 cm in 1980 and 1982. Maximum widths ranged from a low of 38.1 cm in 1977 to an exceptionally large 83.8 cm in 1980. Smaller sized skins of Indonesian origin were re-exported from Singapore in 1979 and 1980, but from 1981 to 1984 the average width of Singaporean re-export was consistently greater than skins received directly from Indonesia (Appendix 6).

C. porosus skins were generally larger than C. novaeguineae skins. Average widths ranged from 33 cm in 1981 to 48.8 cm in 1984 for direct imports from Indonesia, but re-exports from Singapore were either consistently smaller at 17.8 cm in 1980 or considerably larger at 54.4 cm and 63.5 cm in 1981 and 1979 respectively (Appendix 6).

Malaysia

The dealers reported importing 250 kg of wet-salted Crocodylus porosus directly from Malaysia in 1982 and 150 kg in 1984, involving 100 and 200 skin pieces respectively. Wet-salted C. porosus skins imported via Singapore, but declared as originating in Malaysia, were also imported. This trade amounted to 250 kg, 400 kg and 88 kg in 1979, 1980, and 1981 respectively (Figure 43) and comprised 221 skins.

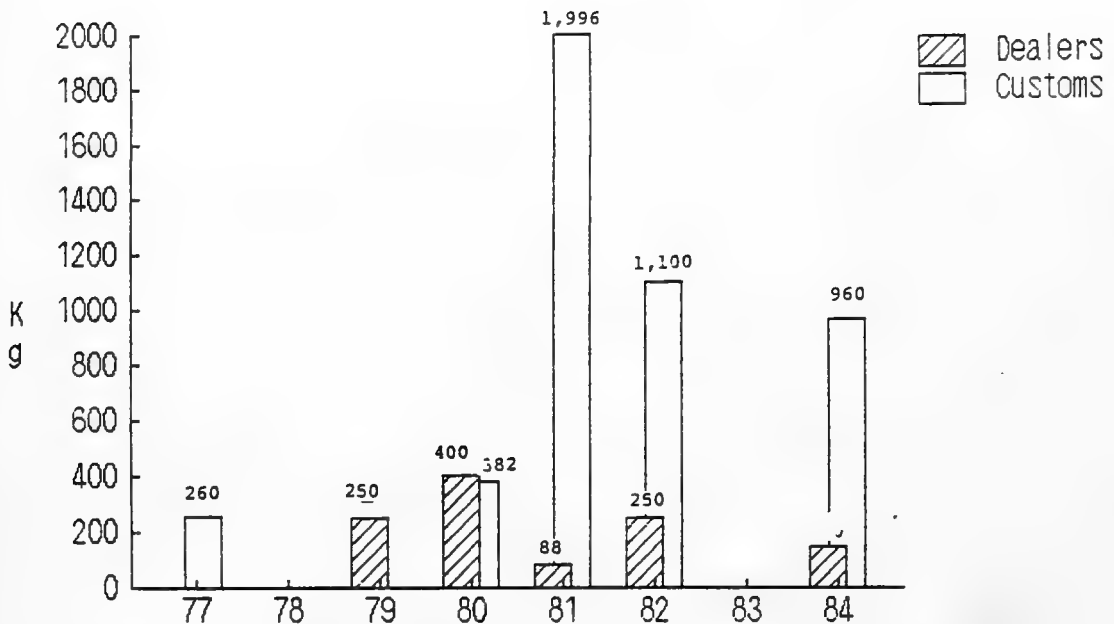


Figure 43: Total imports by weight from Malaysia

Source: Japanese Customs statistics/Dealers' data

Japanese Customs report imports from Malaya and Sabah, both part of Malaysia. Therefore these totals were combined when analysing the Malaysian data. With the exception of 1980, the correlation between the data is poor (Figure 43). No trade is reported by the dealers in 1977, and in 1979 no trade from Malaysia is reported by Customs, perhaps because the skins went through Singapore.

The width of the skins direct from Malaysia ranged from a minimum of 20 in (50.8 cm) to a maximum of 40 in (101.6 cm), with an average of 22.5 in (57.2 cm) in 1982 and 25 in (63.5 cm) in 1984. The skins imported via Singapore were smaller, having a minimum width of 10 in (25.4 cm) and a maximum width of 23 in (58.4 cm), with averages of between 14 in and 21 in (35.6 cm and 53.3 cm) (Appendix 6).

Palau Islands

The dealers reported importing 191 kg, representing 58 pieces of wet-salted Crocodylus porosus skins from the Palau Islands in 1978 and 96 wet-salted pieces (no weight given) in 1979. Customs statistics recorded progressively decreasing imports from 1978 to 1980 from the Marianas,

Japan Imports

Marshall, and Caroline Islands (Figure 44). The two sets of data show a poor correlation of 51% in 1978 and 0 in 1980. (In the Japanese Customs data, trade from Palau would be included under the Marianas, Marshall and Caroline Islands.)

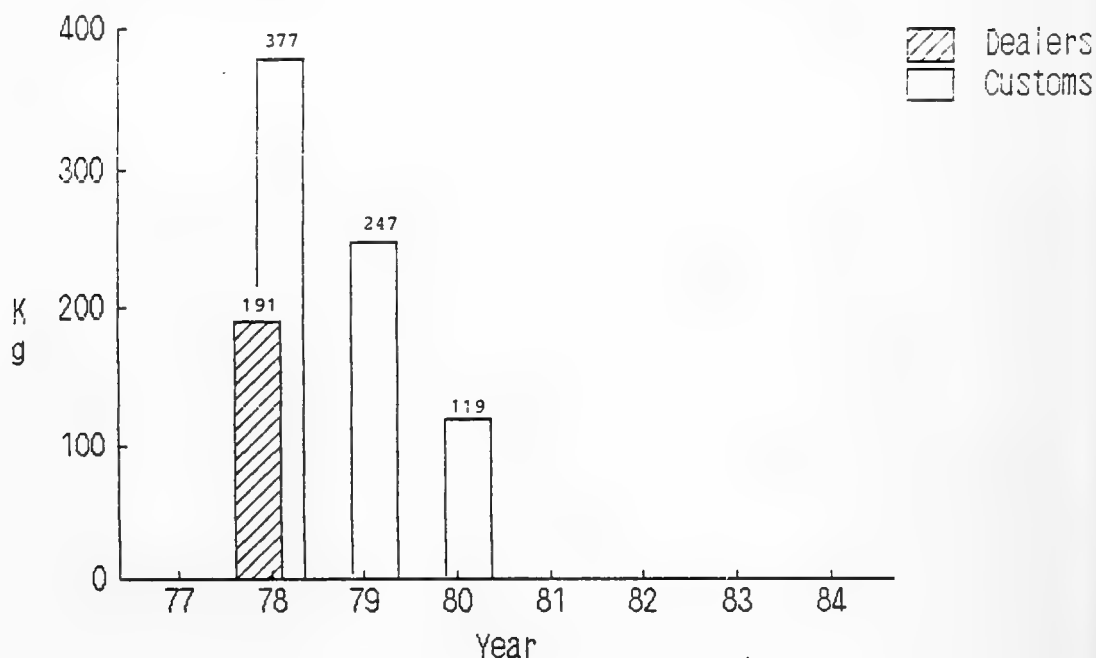


Figure 44: Total imports by weight from Palau Islands

Source: Japanese Customs statistics/Dealers' data

The average width of the skins was 15 in (38.1 cm) in 1978 and 16 in (40.6 cm) in 1979, with a minimum width of 4 in (10.2 cm) and a maximum of 24 in (61 cm) in 1978. No maximum or minimum values were given for 1979.

Papua New Guinea

The dealers' data for 1977 through 1984 showed consistent imports of both Crocodylus porosus and C. novaeguineae skins from Papua New Guinea. The trends exhibited by the dealers' data (which include re-exports of Papua New Guinea skins from Singapore) and Customs statistics are similar (Figure 45). Correlation between the two sets of data is very good in most years, although in both 1978 and 1979 the dealers reported a bigger total volume than was recorded in Customs.

Excluding re-exports from Singapore, imports by weight of wet-salted C. novaeguineae skins rose from 3646 kg in 1977 to peak at 12 882 kg in 1984 (Figure 46).

Wet-salted C. novaeguineae skins, described as from Papua New Guinea but imported via Singapore, were also reported by the dealers from 1979 to 1984 although in declining volumes with the exception of imports in 1981 which peaked at 3244 kg (Figure 47). Clearly from these data, at least the dealers who submitted information are increasingly importing C. novaeguineae skins direct from Papua New Guinea.

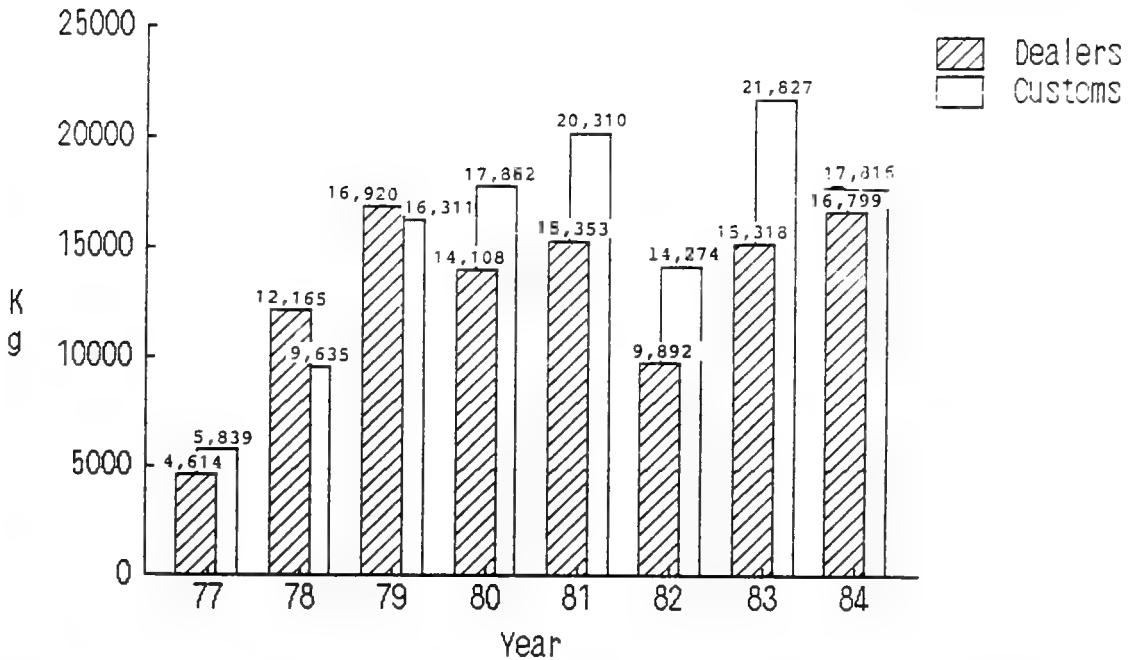


Figure 45: Total imports by weight from Papua New Guinea (including re-exports from Singapore)

Source: Japanese Customs statistics/Dealers' data

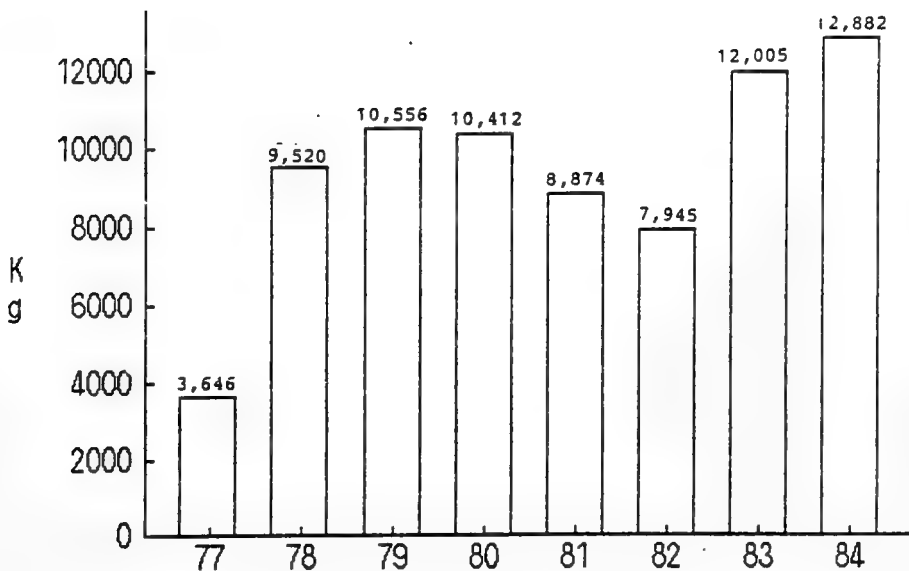


Figure 46: Direct imports by weight of Crocodylus novaeguineae skins from Papua New Guinea

Source: Dealers' data

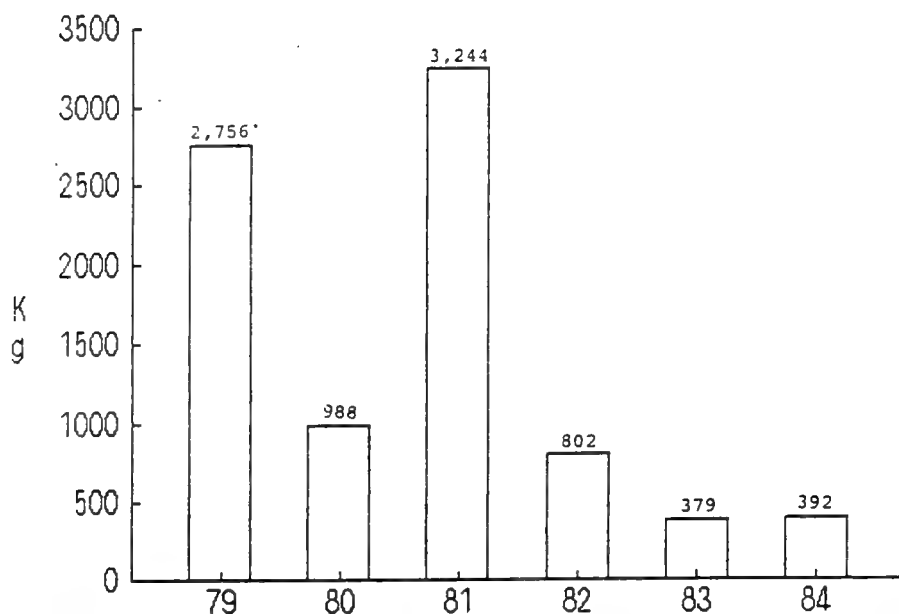


Figure 47: Imports by weight of Crocodylus novaeguineae skins from Papua New Guinea via Singapore
Source: Dealers' data

Over the entire period a total of 69 690 C. novaeguineae skins were imported, with the highest trade levels registered of 1979 and 1980 (Figure 48).

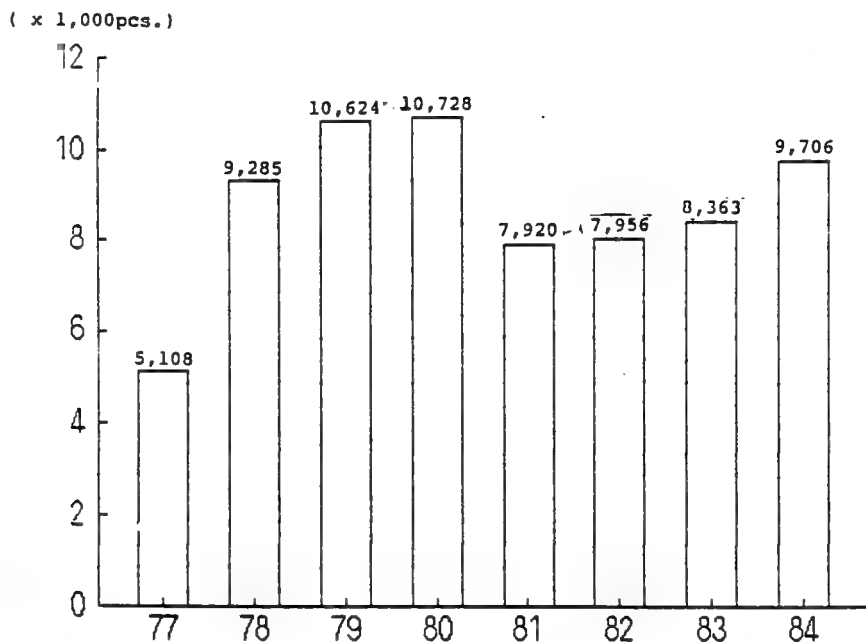


Figure 48: Total numbers of Crocodylus novaeguineae skins imported from Papua New Guinea.
Source: Dealers' data

From 1977 to 1981 the widths of the C. novaeguineae skins directly imported from Papua New Guinea ranged from a minimum of 4 in (10.2 cm) to a maximum of 20 in (50.8 cm) with an average width of between 8 in and 10 in (20.3 cm and 25.4 cm). From 1981 onward, when Papua New Guinea raised the minimum skin width allowed for export to 7 in (17.8 cm), the dealers' data showed the average width increasing to between 10.4 in and 11.1 in (26.4 and 28.2 cm), although the maximum size of 20 in (50.8 cm) remained constant, in line with export regulations (Appendix 6).

Skins imported via Singapore were comparably larger in 1979 and 1984, and approximately the same in 1981. In 1982 and 1983, however, both the minimum (15.2 cm) and maximum (61 cm and 71.1 cm) measurements reported by the dealers were outside Papua New Guinea regulation sizes indicating that some of the skins may not have been sanctioned exports to Singapore (Appendix 6).

In 1979, 65 kg of tanned C. novaeguineae skins were imported from France, but with Papua New Guinea declared as the country of origin. These skins totalled 613 pieces and averaged 24 in (61 cm) in width, measuring between 15 in and 29 in (38.1 cm and 73.7 cm).

Wet-salted C. porosus skins were also imported by the dealers from Papua New Guinea in quantities which increased from 968 kg in 1977 to 3525 kg in 1984 (Figure 49).

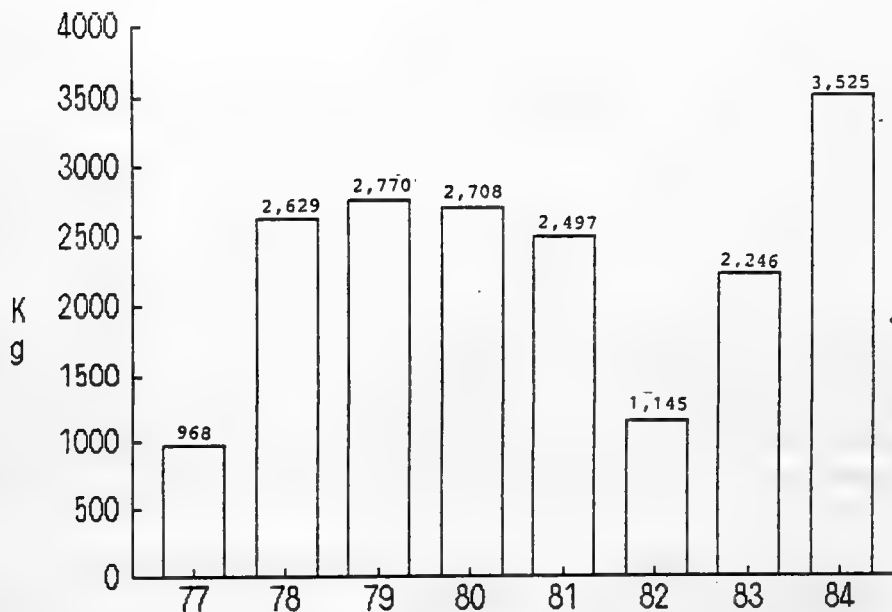


Figure 49: Direct imports by weight of Crocodylus porosus skins from Papua New Guinea

Source: Dealers' data

C. porosus skins described as from Papua New Guinea but imported via Singapore are reported by the dealers in 1979, 1981 and 1983. The skins were wet-salted and weighed 773 kg, and 688 kg respectively.

By number of skins, the trends were similar with the dealers reporting a total of 21 434 skins for the period examined (Figure 50).

(x 1,000pcs.)

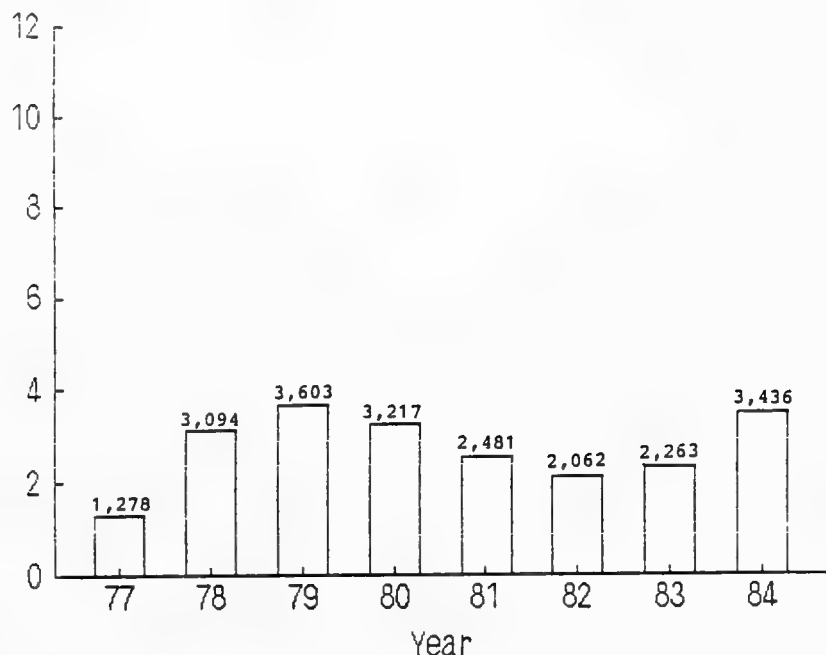


Figure 50: Total number of Crocodylus porosus skins from Papua New Guinea
Source: Dealers' data

The maximum width reported for direct imports from Papua New Guinea was uniformly 29 in (50.8 cm) each year. The minimum was 4 in (10.2 cm) until 1983 when it rose to 7 in (17.8 cm). Average widths ranged from 7 in (17.8 cm) to 10.7 in (27.4 cm) during the period examined (Appendix 6).

The average width of skins imported via Singapore ranged from 10 in to 14 in (25.4 cm to 35.6 cm), with a minimum of 6 in (15.2 cm) and maximum of 35 in (88.9 cm) (Appendix 6). The maximum of 35 in (88.9 cm) reported in 1979 is above the size range permitted by the Papua New Guinea Government, as is the minimum of 6 in (15.2 cm) reported in 1983. This would seem to suggest that at least some of the skins were illegally taken out of Papua New Guinea to Singapore.

Imports of C. novaeguineae are about three times greater by number than imports of C. porosus in all years examined.

Philippines

The dealers reported importing wet-salted Crocodylus novaeguineae from the Philippines in 1979 and 1980. These skins totalled 103 pieces and weighed 250 kg and 151 kg respectively. Although they were described as being C.n. novaeguineae, since the subspecies does not occur in the Philippines, they were most likely in fact C.n. mindorensis, which is in Appendix I of CITES. Customs statistics showed imports from the Philippines consistently occurring from 1979 through 1984, peaking in 1979 at 1749 kg (Figure 51). Correlation with Customs statistics was fairly good in 1980, but poor in every other year.

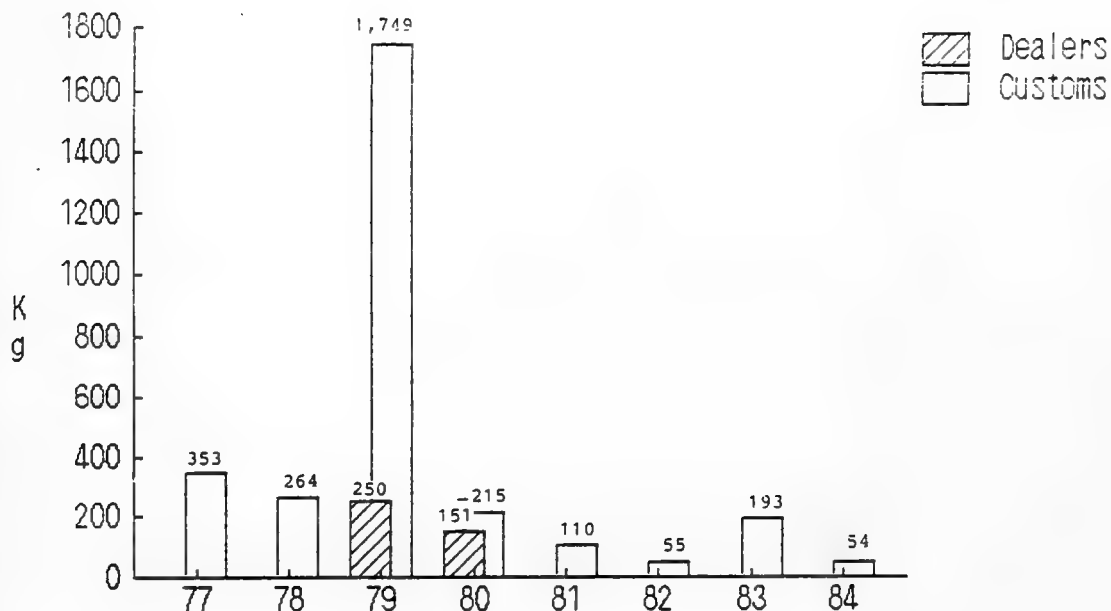


Figure 51: Total imports by weight of skins from the Philippines
 Source: Japanese Customs statistics/Dealers' data

The skins ranged in length from 4 ft to 9 ft (121.9 cm to 274.3 cm) in each year for which there are data from the dealers, with an average of 6 ft (182.9 cm) (Appendix 5).

Singapore

The dealers reported importing Crocodylus porosus and C. novaeguineae from Singapore, both of which are farmed there although in very limited numbers (Luxmoore et al., 1985). With the exception of 1984, the quantities reported were quite small and therefore in most years did not correlate well with the Customs data. Customs show much larger quantities being imported from Singapore (Figure 52); so either the dealers are identifying the skins by country of origin or a number of dealers who did not cooperate with this study imported skins directly from Singapore.

C. novaeguineae skins from Singapore were reported by the dealers only in 1977 and 1978, when 687 kg and 318 kg of wet-salted skins respectively were obtained. These imports totalled 205 skins. The minimum length reported in both years was 10 in (25.4 cm) and the maximum was 18 in (45.7 cm) (Appendix 5). However, these figures were probably misreported and refer to widths not skin lengths. No average was given.

Wet salted C. porosus skins were imported in every year except 1981 and 1982. These skins totalled 4195 kg and numbered 1673 pieces and most trade in 1980 was imported via Indonesia. The smallest minimum width reported for the wet-salted pieces was 6 in (15.2 cm) in 1984, and the largest maximum was 38 in (96.5 cm) the same year, both figures derived from a shipment imported via Indonesia. The average width of skins ranged from 14 in to 18 in (35.6 cm to 45.7 cm) (Appendix 6).

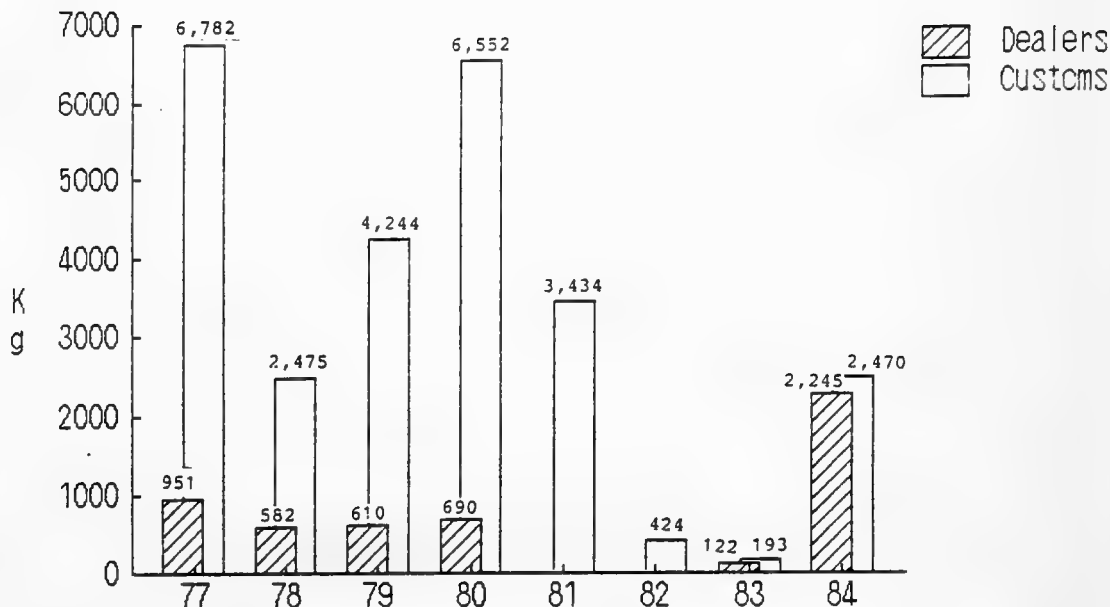


Figure 52: Total imports by weight from Singapore
 Source: Japanese Customs statistics/Dealers' data

Tanned C. porosus skins were imported in 1982 only. The trade numbered 100 skin pieces and totalled 24 kg. Tanned skins averaged 27 cm in width, with a minimum of 20 cm and a maximum of 40 cm (Appendix 6).

The poor correlation of the dealers' data with Customs statistics (except for 1983 and 1984) and the known use of Singapore as a major entrepot make it impossible to establish an accurate evaluation of the trade. Much of it, however, is believed to have originated in Indonesia, thereby circumventing CITES controls.

Solomon Islands

A total of 2069 kg of Crocodylus porosus skins from the Solomon Islands was reported by the dealers for 1981 through 1984, peaking in 1983. Customs statistics also show imports of crocodile skins from the Solomon Islands in 1977 (Figure 53).

The total reported by the dealers in 1983 was 166 kg above the figure given in the Customs statistics. The trends shown by both sets of data are similar with a high growth period in 1982 and 1983 and followed by a drop in 1984. Correlation with Customs is generally very good indicating that few companies outside of those surveyed were engaged in importation from the Solomon Islands.

The minimum width of the skins was 5 in (12.7 cm) in all years except 1981 when it was one inch larger (15.2 cm). Maximum widths rose from 30 in (76.2 cm) in 1981 to 43 in (109.2 cm) in 1984. The average width was 10 in (25.4 cm) in all years except 1982 when it was 14 in (35.6 cm) (Appendix 6).

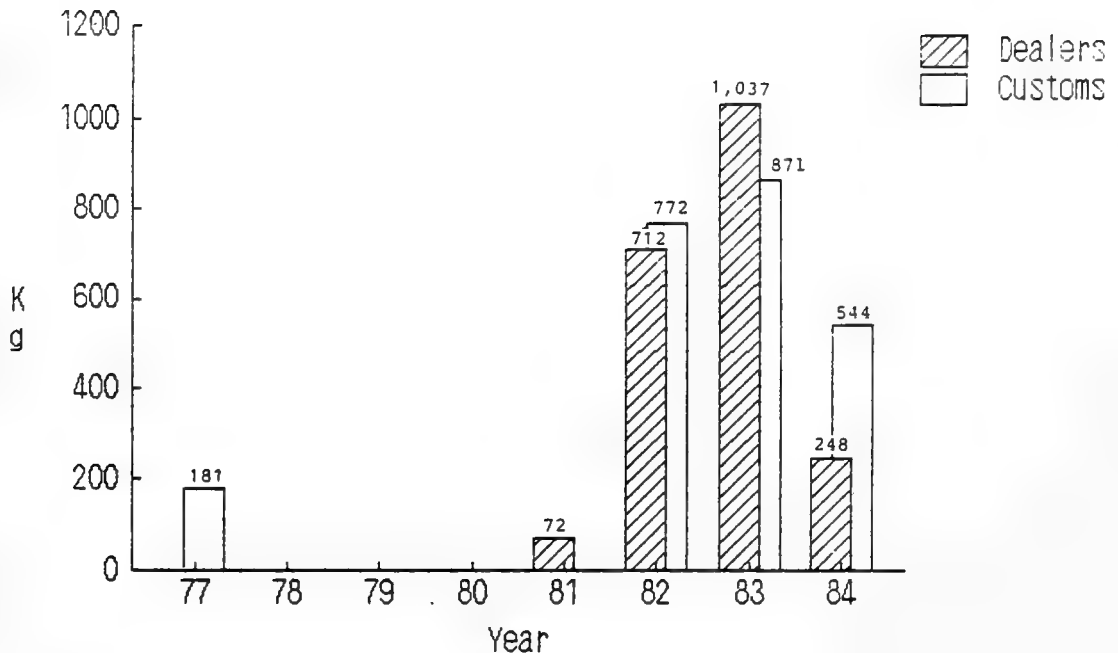


Figure 53: Total imports by weight from the Solomon Islands
 Source: Japanese Customs statistics/Dealers' data

Thailand

Imports of skins from Thailand, involving either Crocodylus siamensis or C. novaeguineae or both, were reported by the dealers from 1978 to 1982 and in 1984. For the purpose of comparison with the Customs data the subtotals for each species were added together. These imports totalled 21 679 kg (Figure 54).

In 1979, 1325 kg of wet-salted C. novaeguineae, representing 200 skins were imported by the dealers. All other imports were of C. siamensis, and numbered 3104 skins.

Correlation between the dealers' data and those of Customs was overall extremely good, ranging from 83% to 100%, except in 1981 when there was a discrepancy of 60%. The trends exhibited by the two sets of data follow the same pattern with no trade reported in 1977, rising to a peak in 1979, declining to nothing by 1983 and then a renewal of imports in 1984.

The wet-salted C. siamensis skins averaged 20 in (50.8 cm) in width in all years except 1984 when it was 21 in (53.3 cm). The minimum and maximum range was consistent at 18 in to 25 in (45.7 cm to 63.5 cm) until 1984 when it was 19 in (48.3 cm) and 26 in (66 cm) (Appendix 6).

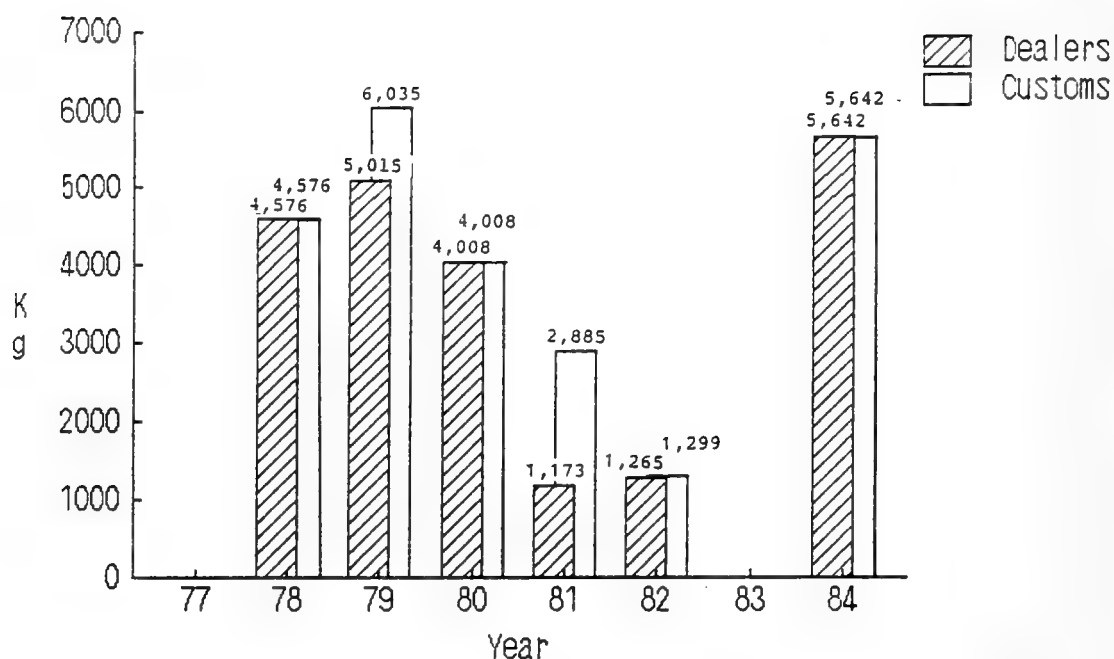


Figure 54: Total imports by weight from Thailand
 Source: Japanese Customs statistics/Dealers' data

Other Asia/Oceanian countries

Three other Asia/Oceanian countries appeared in the Customs statistics which were not included in the dealers' data during the period examined. In 1978, imports from Australia, which at the time had banned all exports of crocodilian skins, totalled 715 kg. From Pakistan, a country where the only indigenous crocodile species are the Appendix I Crocodylus palustris and Gavialis gangeticus, 64 kg of skins were received in 1980 (Appendix 1).

Taiwan was reported as supplying 330 kg of crocodilian skins in 1984 (Appendix 1). Imports from Taiwan reportedly involve Caiman crocodilus, some of which are possibly ranched there. The ranched animals are thought to be originally from Colombia, according to one dealer. It should also be noted that, at least in 1985, illegal shipments of Caiman skins bound for Taiwan were identified leaving Uruguayan ports (Villalba-Macias, pers. comm.).

Africa overview

Japan has traditionally not dealt in crocodile skins directly with African countries, the European dealers having a virtual monopoly. The dealers surveyed reported sporadic trading only with Zimbabwe and South Africa and even then in very small quantities. The most commonly available species, Crocodylus niloticus, is not regarded as a suitable substitute for C. porosus, and Japanese dealers consider that demand for middle quality range skins is currently being met by supplies of C. novaeguineae and Alligator mississippiensis.

South Africa

Dealers reported importing Crocodylus niloticus skins in 1978 when 170 kg, representing 52 wet-salted skins, varying between 30 cm and 40 cm in width, were imported (Appendix 6). Customs data also showed the import of 70 kg of leather in 1977 and 380 kg of skins in 1983, as well as 170 kg in 1978 (Figure 55).

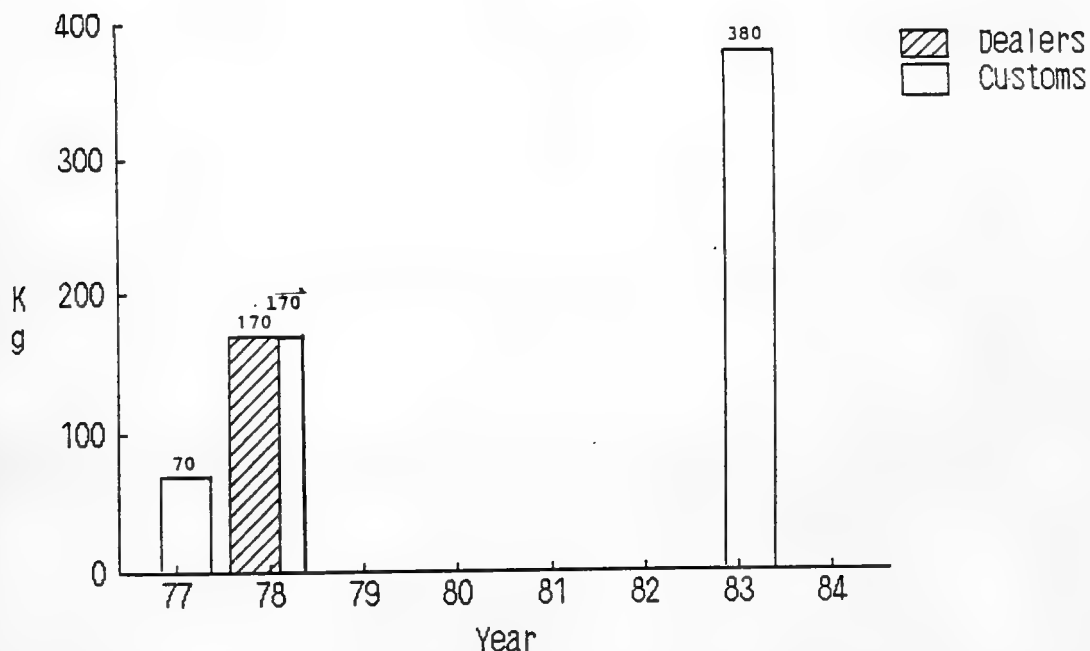


Figure 55: Total imports by weight of crocodilian skins/leather from South Africa

Source: Japanese Customs statistics/Dealers' data

Zimbabwe

A total of 631 kg of wet-salted Crocodylus niloticus skins were reported by the dealers in 1981 and 1984. Customs data showed that 470 kg were imported from Zimbabwe in 1981, which is 33 kg less than reported by dealers for that year, and 128 kg in 1984 (Figure 56). The dealers reported that these imports represented 423 skins.

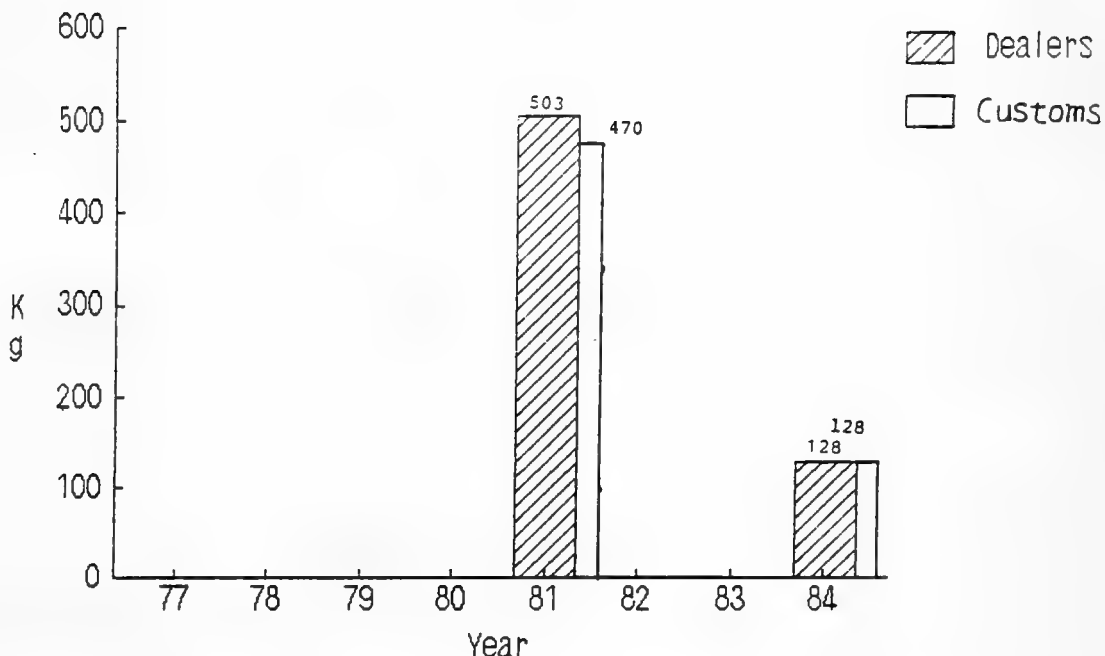


Figure 56: Total imports by weight of crocodilian skins from Zimbabwe
 Source: Dealers' data

The skins from Zimbabwe ranged in width between 25 cm and 48 cm with an average of 41.6 cm in 1981 and 40.7 cm in 1984 (Appendix 6).

Other African countries

Two other African nations are reported in the Customs data as suppliers of crocodilian skins to Japan. In 1977, 132 kg were reportedly received from Kenya, and in 1978, 7343 kg were imported from Nigeria (Appendix 1). Neither country was identified in the dealers' data.

Europe overview

Although there are no crocodilian species native to Europe, several countries primarily France and Italy, but also Spain, F.R. Germany and Switzerland, have domestic industries engaged in the manufacture of reptile skin products. Although net importers, European dealers occasionally re-export to Japan. Most trade involves tanned skins usually of Crocodylus niloticus and C. cataphractus, African species not traditionally imported directly from countries of origin to Japan in significant quantities.

European countries are also known to have served as laundering points for illegal skin shipments destined for Japan. In recent years, the freeport of Hamburg, F.R. Germany, and Spain before ratification of CITES have been identified as transit points for illegal shipments of Caiman skins from South America. This traffic, however, is not apparent in either Customs or dealers' data.

France

A total of 20 kg in 1977 and 99 kg in 1978 of tanned Crocodylus niloticus skins were imported from France, followed by 104 kg in 1979 and 194 kg in 1980, according to the dealers' data. The pieces ranged in width from 12 cm to 39 cm, with averages varying between 19.5 cm and 23.5 cm depending on the year (Appendix 6).

Tanned pieces of C. cataphractus were also imported from France: 203 kg in 1977, 120 kg in 1978, 445 kg in 1979, and 155 kg in 1980. The width of these pieces ranged between a minimum of 12 cm and a maximum of 35 cm, with averages varying between 19.5 cm and 23.5 cm depending on the year (Appendix 6).

Also imported from France were 23 kg of tanned C. porosus pieces in 1978 and 8 kg of C. novaeguineae in 1982. The porosus skins ranged between 25 cm and 40 cm, but overall averaged 30 cm (Appendix 6). The novaeguineae skins were larger, averaging 37 cm in width, and ranging between 30 cm and 50 cm.

Customs consistently reported imports of crocodilian leather from France. In some years correlation with the dealers' data is very good, in others extremely poor (Figure 57), suggesting that the dealers who supplied data were intermittent importers. In no year was the volume reported by Customs substantial (Figure 57). The number of tanned skin pieces imported from France totalled 9491 skins (Figure 58).

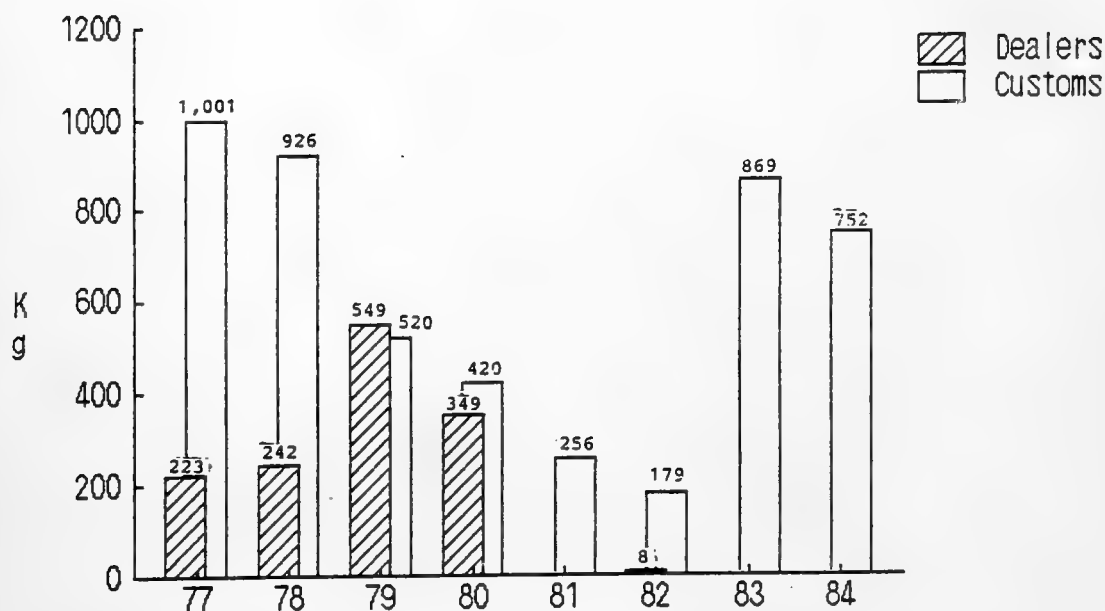


Figure 57: Total imports by weight of tanned skins/leather from France
Source: Japanese Customs statistics/Dealers' data

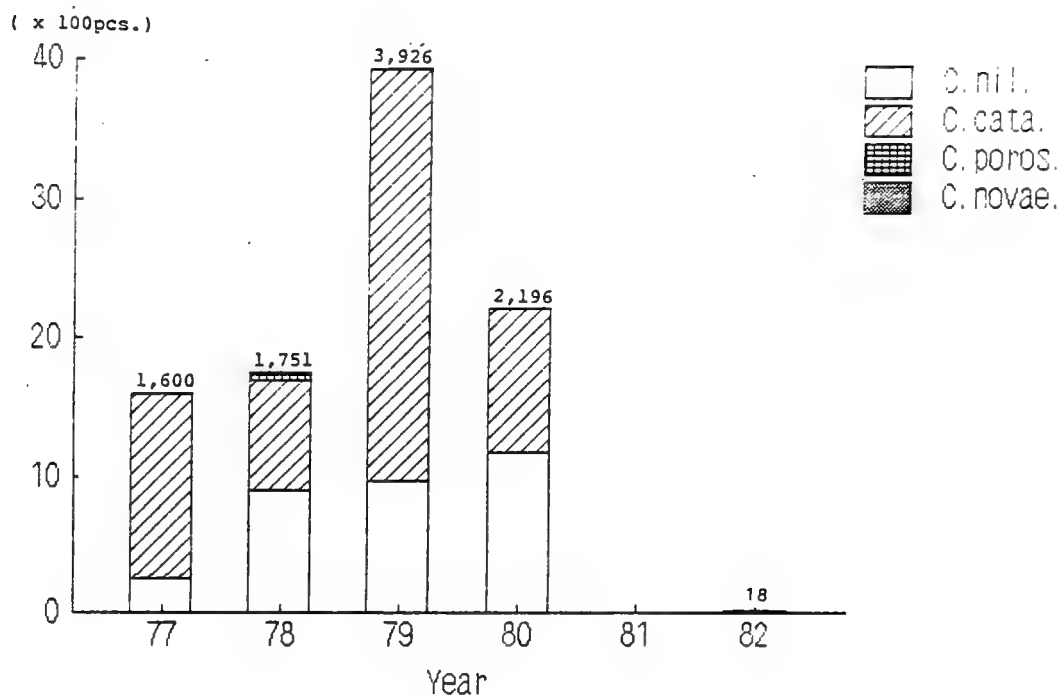


Figure 58: Total number of tanned skin pieces imported from France
Source: Dealers' data

Figure 59: Total imports by weight of tanned skins/leather from Italy
Source: Japanese Customs statistics/Dealers' data

Italy

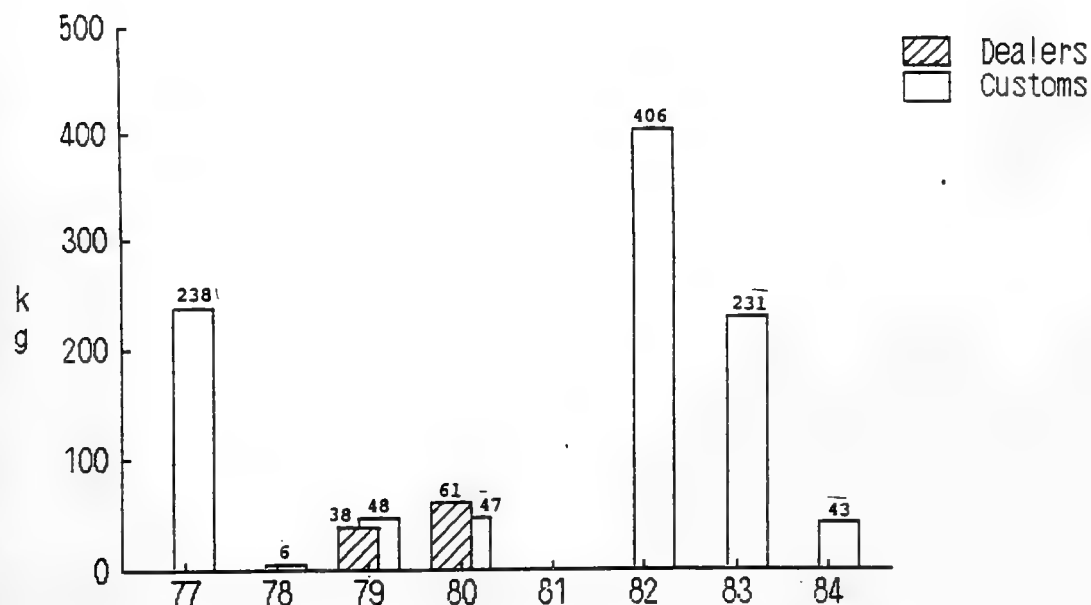
Imports from Italy were only reported by the dealers in two years, 1979 and 1980, when 38 kg or 293 skin pieces and 61 kg or 500 skin pieces respectively of tanned Crocodylus niloticus pieces were recorded. Customs data showed imports of crocodilian leather in every year except for 1981, with the largest total of 406 kg in 1982 (Figure 59). Correlation with Customs imports was fair in the years for which there were data from the dealers, 79% in 1979 (only 10 kg difference) and, in 1980 dealers reported 14 kg more from Italy than did Customs.

Spain

A total of 67 kg or 500 tanned Caiman crocodilus crocodilus skins were reportedly imported by the dealers in 1979, although Customs have no record of any imports from Spain in any year. The minimum width of these pieces was 25 cm, the maximum was 34 cm, and the average was 30 cm.

Other European countries

In the Customs data, in 1979, both Belgium and Switzerland were reported as exporting 944 kg and 496 kg respectively to Japan. The dealers' data did not include any trade from these countries.



VALUE OF THE TRADE IN RAW CROCODILIAN SKINS

Based on Customs statistics, the declared value of raw crocodilian skin imports into Japan ranged from Y710 million (US\$2.4 million) in 1977 to Y1.7 billion (US\$7.1 million) in 1982 (Figure 60). Overall, a pattern of growth was seen during the period examined, due to a combination of fluctuating but generally favourable market factors.

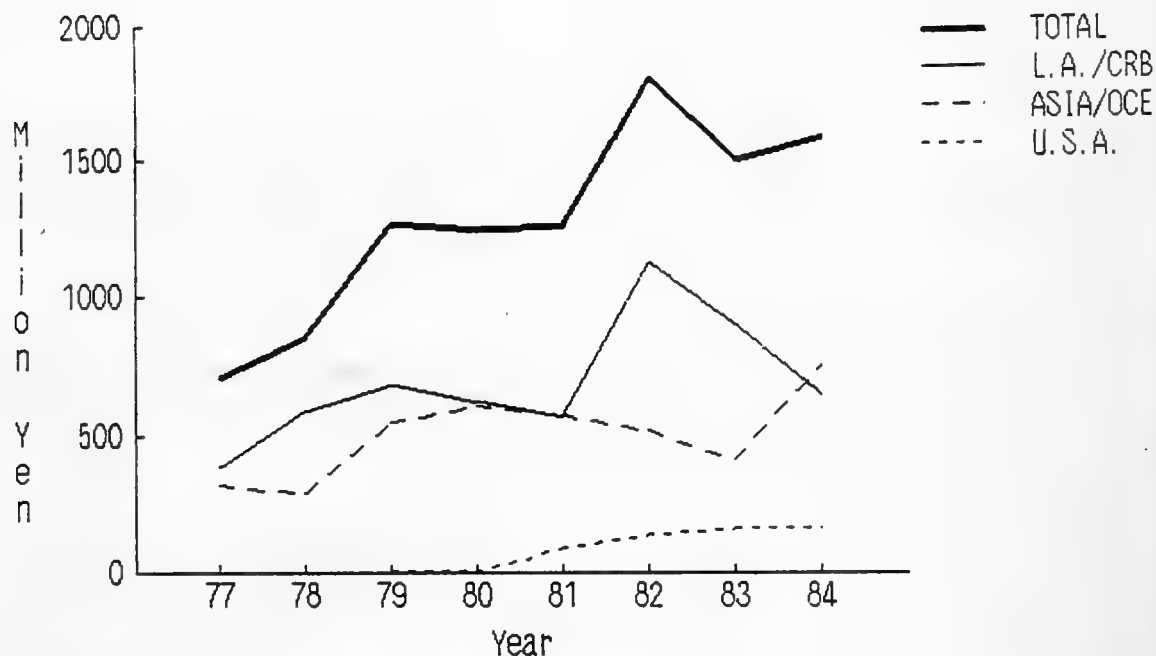


Figure 60: Total value of crocodile skin imports

Source: Japanese Customs statistics

From 1977 to 1979, the value of the trade rose by 76% reflecting the steady increase in trade volumes which occurred during the period (Figure 60). The average value in yen per kilo appeared to decrease during the period, however, that trend is deceptive. While Customs data for 1978 indicate that the average value per kilo dropped by 11%, in fact, that year the value of the yen to the US dollar, the currency used for virtually all international transactions, increased by 30% (Figure 61). Therefore, if figures are adjusted accordingly, the value in US dollars per kilo for skins actually increased by about 20% that year. The following year, however, the value per kilo dropped slightly.

In 1980, market factors experienced a reversal, which may have been partly influenced by Japan's accession to CITES that year. A 44% drop in trade volume was offset by the average value per kilo climbing to the highest level ever in the history of the Japanese industry - Y13 492 (US\$59.43) (Figure 61). In 1981, a 13% decline in value per kilo was noted, but total trade volumes increased proportionately. As a result, the overall value of the trade remained constant during these years (Figure 60).

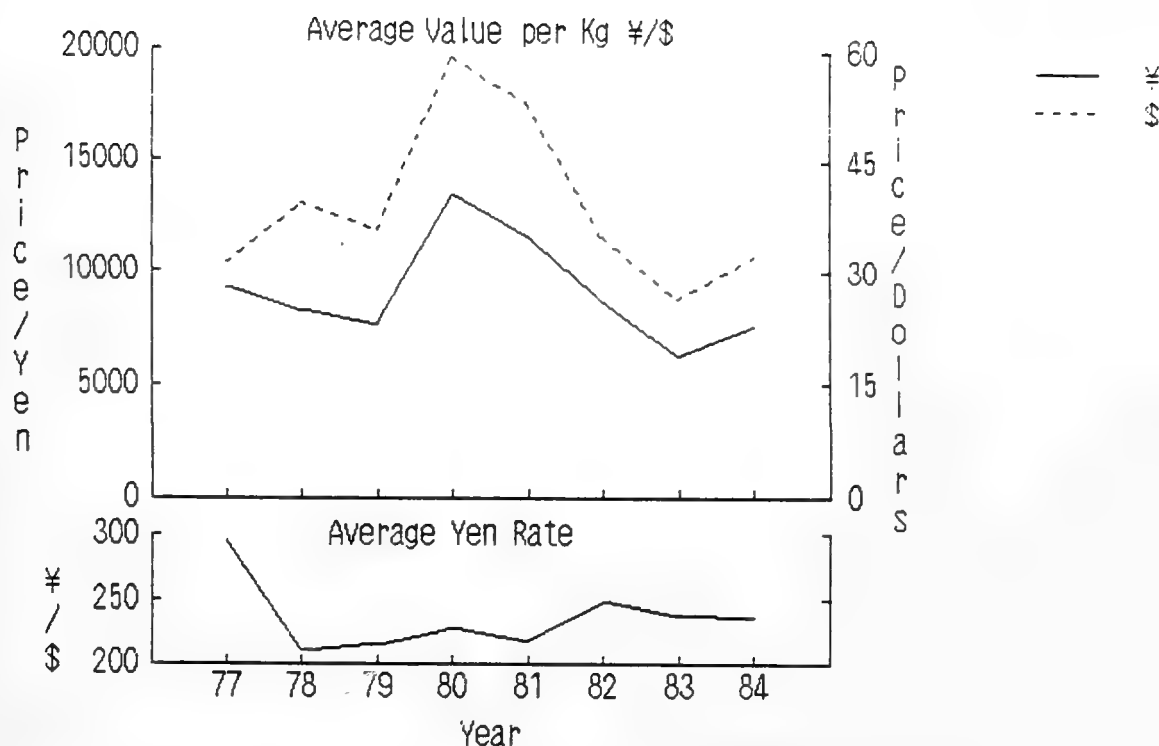


Figure 61: Average value per kilo of crocodile skin imports
Source: Japanese Customs statistics

The value of the trade increased again in 1982 (Figure 60) when dramatic growth in import volumes (Figure 1) more than compensated for a substantial drop in the average value per kilo (Figure 61). In 1983, despite the highest import volume ever, the total value of the trade decreased by 17% as the average value per kilo fell to the lowest level for the period examined (Figure 61). Despite a 14% of decline in total volume, there was a slight increase in the value of the trade in 1984, the result of an increase in the average value per kilo.

When analysed on a regional basis, the value of imports clearly reflects the differences in species composition. Imports from Asia/Oceanian countries, which are known to be largely composed of higher quality and more expensive Crocodylus porosus and C. novaeguineae skins, represent from 4% to 20% more of the trade by total value than by total volume (Figure 62). Conversely, imports from Latin America and the Caribbean, which overwhelmingly involve cheaper Caiman skins, represent from 9% to 21% more by total volume than by total value. Imports of Alligator mississippiensis from the United States annually ranged from 9% to 13% of the total volume and from 7% to 11% of the total value of Japanese crocodile skin imports.

While the dealers' data identified both Paraguay and Colombia as trading in Caiman crocodilus skins, analysis of the average value per kilo of skins coming from the two countries was remarkably divergent (Figure 63). Skins from Paraguay showed a modest fluctuation in the average value per kilo. From a low of Y3853 (US\$13.02) in 1977, the average value steadily climbs to a peak of Y7415 (US\$33.86) in 1981, thereafter declining to Y4816 (US\$20.32) in 1984.

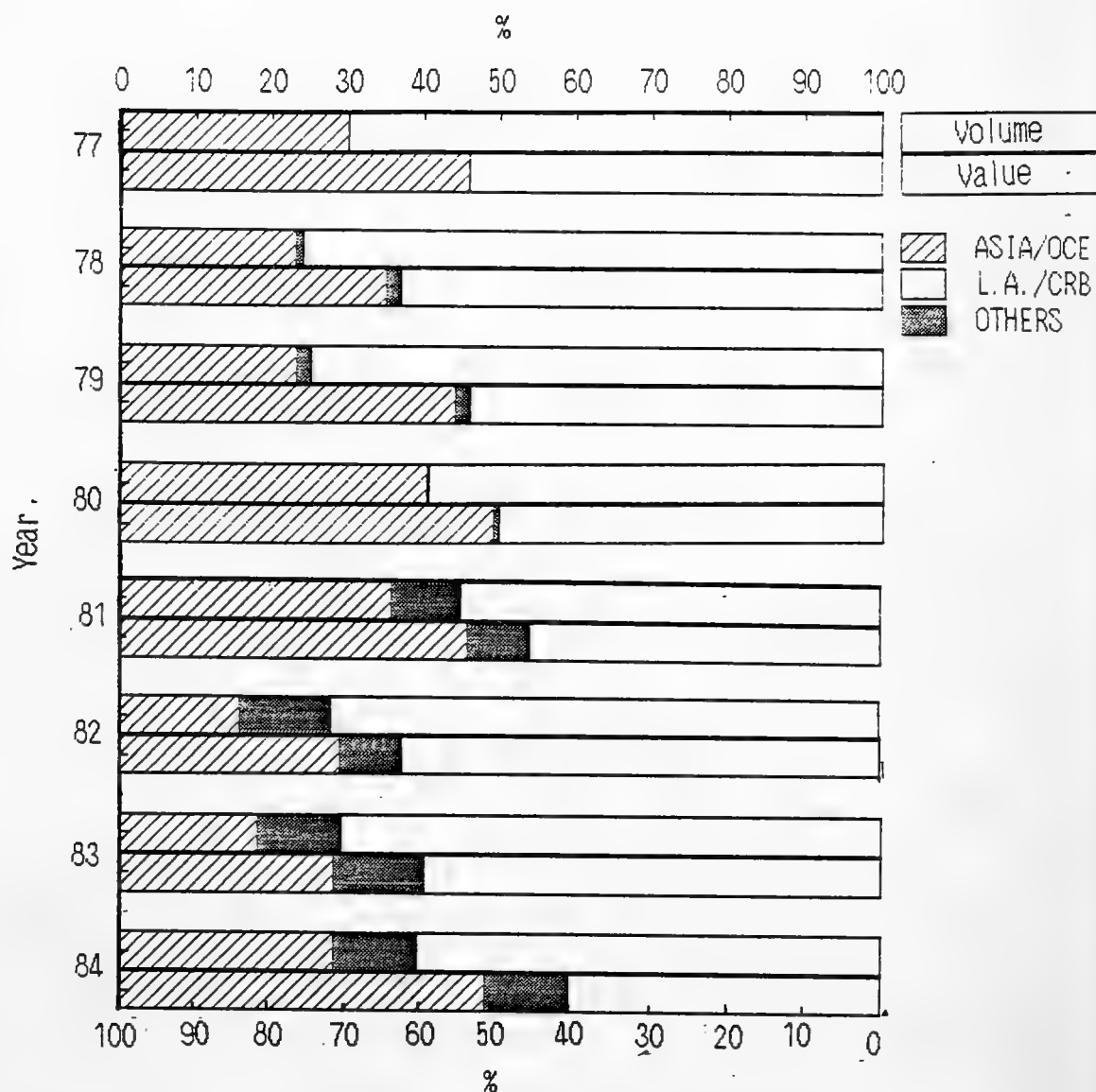


Figure 62: Comparative annual value and volume % of total trade from Latin America/Caribbean region and Asia/Oceania region

Source: Japanese Customs statistics

The average value per kilo of Colombian skins showed a similar trend but a much greater level of growth from 1977 to 1981, followed by a decline. The fact that the average value per kilo of the skins from Colombia was 50% to 230% more than the price for presumably the same species originating from Paraguay is difficult to interpret.

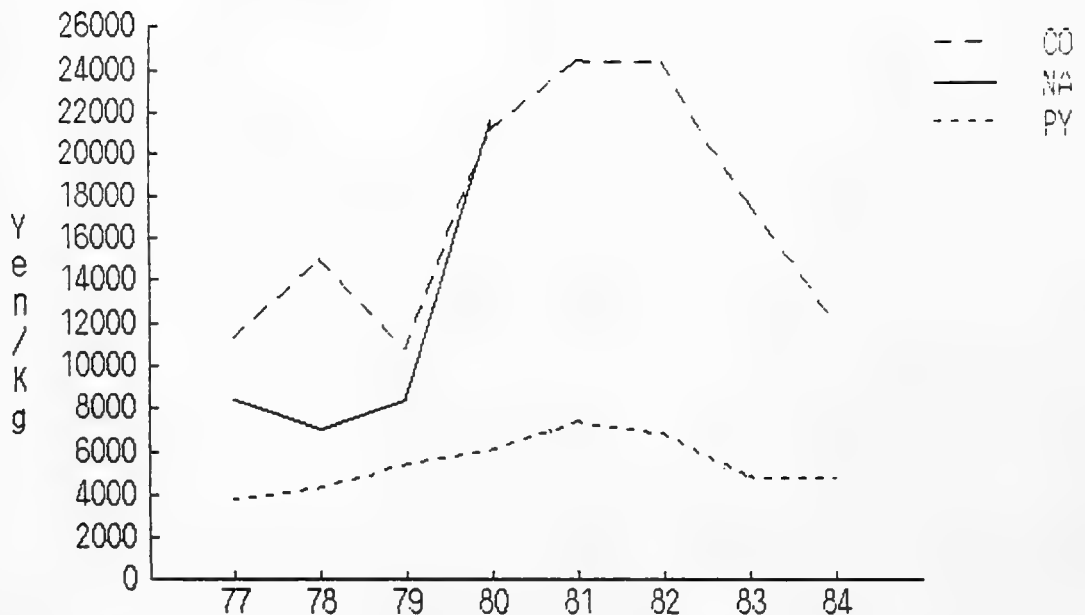


Figure 63: Average value per kilo of imports from Colombia, Netherlands Antilles, and Paraguay
 Source: Japanese Customs statistics

The dealers' data identified Colombian Caiman skins as consistently smaller than those originating from Paraguay. Moreover, the average value per kilo of Colombian skins is equivalent to or substantially more than the value of classic crocodilian skins from Papua New Guinea or Indonesia in most years (Figure 64). This considerable discrepancy could perhaps be explained if imports from Colombia involved skins from the South American classic crocodilians, Crocodylus intermedius and C. acutus or Melanosuchus niger, but certainly the former two species were severely depleted in Colombia and elsewhere when this trade occurred (Groombridge, 1982). Japanese dealers only acknowledged receiving very small quantities of the latter species.

Imports of Caiman crocodilus skins from the Netherlands Antilles, the third major supplier in both Customs and dealers' data for the period examined, in most years held a middle range between the average value per kilo of Colombian and Paraguayan skins (Figure 63). The one exception was 1980, when the value increased to Y21 674 (US\$95.48) per kilo to become the most expensive imports from the region that year. In terms of average length, the dealers' data reported skins from the Netherlands Antilles as similar in size to those from Colombia, and substantially smaller than those from Paraguay.

A similar analysis of the average value per kilo of imports from Papua New Guinea, Indonesia, and Singapore, the major contributors of skins from Asia, shows considerable fluctuation (Figure 64). All of these countries are known to trade primarily the same two species, Crocodylus porosus and C. novaeguineae, although from year to year the species composition and other factors such as size or quality of skins is known to differ.

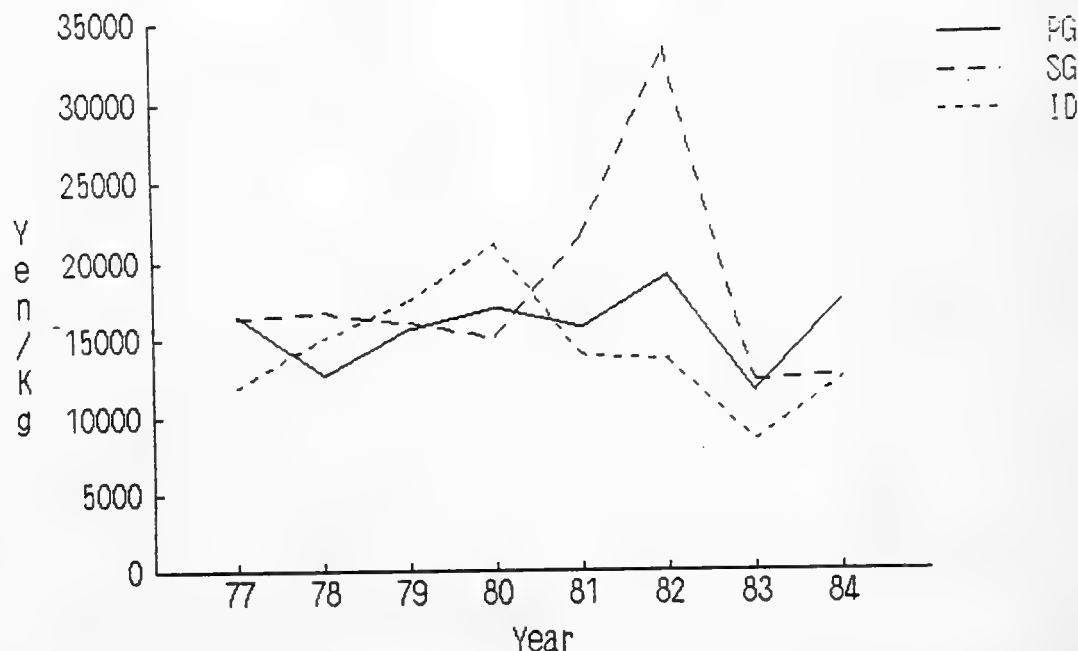


Figure 64: Average value per kilo of imports from Indonesia, Papua New Guinea, and Singapore

Source: Japanese Customs statistics

While some dealers mentioned that skins are considerably cheaper when imported from Singapore, as opposed to Indonesia, Customs data reveals the average value per kilo for Singaporean trade to be more expensive than Indonesian imports for all years except 1979 and 1980. Singapore imports ranged in value per kilo from Y12 044 (US\$50.82) in 1983 to a remarkable Y33 236 (US\$134.02) in 1982. In contrast, the Indonesian range per kilo was considerably lower, from Y8254 (US\$34.83) in 1983 to Y21 079 (US\$92.86) in 1980. However, it needs to be remembered that Customs data only refer to the declared value of the skins and do not take into account any additional payments which may be necessary to facilitate shipment of skins out of Indonesia. Furthermore the Customs statistics record country of origin rather than country of consignment.

Overall, fluctuations in the average value per kilo of imports from Papua New Guinea have been less than those for either Indonesia or Singapore. Ranging in value per kilo from Y11 250 (US\$47.47) in 1983 to Y18 865 (US\$76.07) in 1982, Papua New Guinea skins were from 13% to 41% more valuable per kilo than those from Indonesia in all years except from 1978 through 1980, when Indonesian trade was from 2% to 25% more valuable. It is perhaps significant to note that since Papua New Guinea instituted ranching and established a minimum and maximum size requirement for exports in 1981, her stocks have consistently been more valuable per kilo than imports from Indonesia.

Imports from Thailand, which are known to involve mostly farmed Crocodylus siamensis skins (although the dealers reported some imports of C. novaeguineae in 1979), have been consistently lower in value per kilo than

other classic crocodilians imported from Asia/Oceanian countries. The average value per kilo ranged from Y5187 in 1978 to Y10 245 in 1982, which compared favourably with the average value per kilo of Alligator mississippiensis skins from the United States (Figure 65).

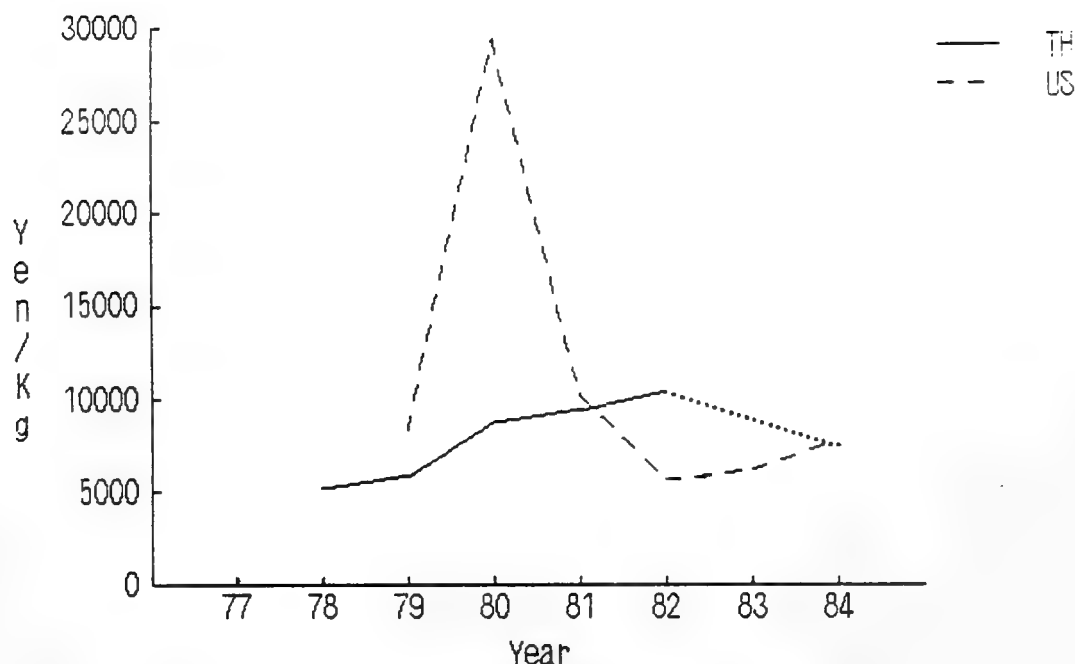


Figure 65: Average value per kilo of imports from Thailand and the United States

Source: Japanese Customs statistics

The average value per kilo for A. mississippiensis, the only species regularly exported from the USA, ranged from Y5663 (US\$22.83) in 1982 to Y10 217 (US\$46.65) in 1981, with the exception of 1980 when the value reached Y29 449 (US\$129.73), which stands as an anomaly and defies interpretation (Figure 65). While the value per kilo for skins for this species and C. siamensis are within the range of that for inferior quality Caiman skins, it needs to be remembered that there are substantially more Caiman skins to the kilo than either of these classic crocodilian species.

The total value of the trade is expected to remain stable or grow even further, even in the face of a decline in import volumes. Even if cheaper Caiman skins become increasingly more difficult to obtain, it is likely that more costly classic crocodilian skins will assume an even greater share of total imports, thereby keeping the total value of the trade high.

DISCUSSION AND CONCLUSIONS

After a period of expansion, Japan's crocodile industry is currently in a state of uncertainty. According to some dealers, the fashion in Japan for alligator and crocodile skin products peaked between 1983 and 1985 and the demand is now tapering off. At the same time, expensive European luxury products remain highly competitive in the brand-oriented Japanese market, a fact which obviously cuts into domestic sales. The rush to stockpile skins from 1983 onward has further given rise to severe cash flow problems for some companies. These factors, combined with growing difficulties in getting skins, particularly cheaper Caiman skins from South America, could cause increasingly serious problems for the industry.

More than any other species, Crocodylus porosus holds great psychological importance for the Japanese industry. Accordingly, it was the only crocodilian species singled out by the industry for a reservation under CITES. Although skins are annually available, supplies are by no means limitless. Most wild stocks have been depleted (Groombridge, 1982) and ranching/farming operations do not yet generate sufficient quantities of skins for the trade. While the situation in Papua New Guinea remains stable enough, in Indonesia, where the problems of enforcing export controls are immense, the future is far less predictable, with over-exploitation of accessible stocks a serious possibility if the recent initiative to develop a management programme fails. The anticipated entry into trade of ranched Australian skins in late 1986 could compensate for any decline in supplies from Indonesia, but, according to CITES Regulations, in order for Japan to be eligible for trade in ranched specimens, the reservation on C. porosus will have to be dropped.

Increasingly, Papua New Guinea is seen as an example to be emulated and promoted elsewhere by dealers who see government-controlled programmes as a means to ensure long-term supplies of quality skins. Accordingly, the 15% greater cost dealers are now paying for Papua New Guinea C. porosus and C. novaeguineae skins is justified by the better quality skins which are produced, the reliability of delivery, and the legality of the skins in the USA, if necessary. Indeed, it is encouraging to note that the Japanese importers are taking a leading role in the development of ranching/farming activities in the Philippines.

C. niloticus is now more accessible to Japanese importers in the wake of EEC regulations which have the effect of limiting imports into the Community (notable France and Italy), the establishment of export quotas in connection with downlisting of populations to Appendix II in many African countries, and, most recently, the extremely favourable exchange rate for yen in relation to the US dollar. These factors will probably stimulate some direct importation from Africa, but this trade will probably never replace the reliance on C. porosus as the preferred species in Japan.

Likewise, A. mississippiensis is popular for its combination of greater length relative to belly width with quality of skin. However, the preference for C. porosus still applies and A. mississippiensis is not regarded as a substitute. While import levels may rise somewhat, in general it would appear that current levels are at about market capacity, according to Japanese dealers.

The most serious problem for the dealers in the long run is the availability of Caiman skins. The Japanese market is dependent upon large-scale imports of Caiman skins to supply a public demand for low-priced products. The effect of CITES controls in the reduction or elimination of some sources of skins could force some smaller companies to go bankrupt. Nor is Caiman ranching or farming seen as a viable alternative since the inherent

increase in cost would price the skins above the market level which they currently supply. However, the situation in Venezuela where Caiman management is being promoted, is being closely watched and could offer substantial future supplies.

The problems of the industry are exacerbated by systems of payment in some of the exporting countries. C. novaeguineae skins imported directly from Indonesia cost approximately \$3.00 more per inch than similar skins obtained via Singapore, owing to the difficulties in obtaining bureaucratic approval for the shipment. Furthermore, in many cases, delivery of skins is dependent upon systematic visits and continual maintenance of relations in Indonesia which are expensive. For many small Japanese companies it is much simpler and more economical to import from Singapore; the skins are cheaper and often require only a telephone call to be obtained.

Political instability and commercial unpredictability are also serious problems in South America. While the trade has undoubtedly taken advantage of the opportunities created by the lack of enforced controls, it is also true that such factors increase the difficulties of obtaining legal skins. Japanese commercial interests have also taken an interest in conservation plans in the region. For example, a plan to fund the establishment of a central management station in Colombia or Paraguay which would carry out biological research, monitor populations and regulate exports under government control is being seriously discussed within the industry.

Because Japan plays such an important role in the world trade in crocodilian skins, insight into Japanese market patterns and other factors governing her trade is essential for sound management policies to be developed worldwide. The data supplied by the Japanese dealers provide the first independent confirmation of the validity of the Japanese Customs statistics, and they give invaluable information on the size of skins in trade, which was previously not available. They also help to highlight where there are problems of enforcing protective legislation as well as the problems, from the dealers' perspective, of obtaining reliable and legal supplies. If the situation is to improve in both conservation and commercial terms, enforcement of controls must be made more secure in importing and exporting countries so that skins are only obtained from exploitable populations, which will, in turn, help to ensure continuity and reliability of supply.

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Appendix 1: Japanese Imports of Crocodile and Alligator Skins
from 1970 to July 1986/Japanese Customs Statistics

(Unit : Kg)

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	Total
Country																	(~July)	
North America																		
US	25,345	14,692	17,265	11,089	1,259	2,286	1,589			1,255	256	9,035	25,519	26,036	21,009	37,903	15,598	210,136
North America Total																		
	25,345	14,692	17,265	11,089	1,259	2,286	1,589			1,255	256	9,035	25,519	26,036	21,009	37,903	15,598	210,136
Latin America/Caribbean																		
PY								25,544	42,259	52,343	35,546	49,558	138,576	158,676	117,456	76,533		696,491
CO	93,532	79,940	46,173	26,356	3,367	13,411	4,938	8,996	16,231	17,403	16,778	7,992	6,290	6,111	6,230	14,845	5,951	374,550
PA	440		9,488	6,689	3,644	10,277	1,770	11,136	4,086		856					550		48,937
SR			180						1,606		29,870							31,656
AN				855	668		512	5,806	4,975	15,785	1,080							29,681
SV																		22,845
VE		2,079	2,932	3,390	518	945		98	2,224							6,116	16,729	21,289
GF									4,472	5,832								10,304
NI	257	1,148	3,462	3,919		225												9,011
AR																286	2,645	2,931
PZ			2,336															2,336
BN																2,250		2,250
BO								1,600								620		2,220
GY							548	230	879									1,657
PE									1,445									1,445
BR	585	0					53											638
PR						396												396
Latin America/Caribbean Total																		
	94,814	83,167	64,572	41,209	8,197	25,254	7,821	53,410	78,177	121,239	54,260	57,550	144,866	164,787	123,686	107,355	28,273	1,258,637
Asia/Oceania																		
ID	770	275	1,962	3,162	1,889	5,037	5,439	9,373	5,731	9,543	7,476	9,554	15,222	19,348	28,477	39,781	8,368	171,407
PG	6,372	2,955	5,839	4,550	2,690	551	337	5,839	9,635	16,311	17,862	20,310	14,274	21,827	17,816	15,301	5,001	167,470
SG	3,064	2,457	7,930	17,213	7,285	10,503	7,619	6,782	2,475	4,244	6,552	3,434	424	91	2,470	6,529	1,925	90,997
MY	3,292	5,525	2,582	1,046	289			260			382	1,996	1,100		960	6,503	12,057	35,998
TH			20				2,500		4,576	6,035	4,008	2,885	1,293		5,642	2,128	1,189	30,282

Appendix 1 (cont.)

Japanese Imports of Crocodile and Alligator Skins

Source: Customs Statistics

(Unit: kg)

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	Total
Country																		
Asia/Oceania																		
PH	688	2,568	891	809	617	104	664	353	264	1,479	215	110	55	193	54	25		9,089
TW															330	2,223	1,404	3,957
SB				65		32	255	181				72	772	871	544	550	526	3,868
AU	1,429	783	668						715									3,595
PC									377	247	119							743
PK											64							64
Asia/Oceania Total																		
	15,615	14,563	19,892	26,845	12,770	16,227	16,814	22,788	23,773	37,859	36,678	38,361	33,146	42,330	56,293	73,046	30,470	517,470
Africa																		
ZM																2,478	4,685	7,163
ZA				793	385	2,089			170					380				3,817
NZ					33	311	896											1,240
ZW												470			128		545	1,143
SD																		1,048
NG									734									734
MG				328														434
IE							86	132										283
CI																		23
Africa Total																		
			328	2,035	418	2,400	982	132	904			470		380	128	2,478	5,230	15,885
Europe																		
NL	1,082																	1,082
BE										944								944
CH										496								496
FR																		90
Europe Total																		
	1,082	90								1,440								2,612
Grand Total																		
	136,856	112,512	102,057	81,178	22,644	46,167	27,206	76,330	102,854	161,793	91,194	105,416	203,531	233,533	201,116	220,782	79,571	2,004,740

Appendix 1, Contd.

Key to country codes

AN	Netherlands Antilles
AR	Argentina
AU	Australia
BE	Belgium
BO	Bolivia
BR	Brazil
CH	Switzerland
CI	Ivory Coast
CO	Colombia
DE	Federal Republic of Germany
DD	German Democratic Republic
DK	Denmark
EG	Egypt
ES	Spain
FR	France
GB	United Kingdom
GF	French Guiana
GY	Guyana
HK	Hong Kong
HN	Honduras
ID	Indonesia
IT	Italy
KE	Kenya
MG	Madagascar
MX	Mexico
MY	Malaysia
MZ	Mozambique
NG	Nigeria
NI	Nicaragua
NL	Netherlands
PA	Panama
PC	Pacific Islands
PE	Peru
PG	Papua New Guinea
PH	Philippines
PK	Pakistan
PR	Puerto Rico
PY	Paraguay
PZ	Panama Canal Zone
SB	Solomon Islands
SD	Sudan
SE	Sweden
SG	Singapore
SR	Suriname
SV	El Salvador
TH	Thailand
TW	Taiwan
US	United States of America
VE	Venezuela
ZA	South Africa
ZH	Zambia
ZW	Zimbabwe

SPECIES: _____

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Appendix 3. Dealers' data: Weight and number of skins, compiled by species
W - Wet-salted D - Dry-salted T - Tanned

Country/ Species		1977	1978	1979	1980	1981	1982	1983	1984
A.mississip.	W No	-	-	-	-	2790	5448	6508	4370
	kg	-	-	-	-	9182	19606	24387	18327
A.mississip.	T No	-	-	-	-	-	-	-	246
	kg	-	-	-	-	-	-	-	167
A.mississip. Total	No	-	-	-	-	2790	5448	6508	4616
	kg	-	-	-	-	9182	19606	24387	18492
C.c.crocodilus	D No	70733	97461	180357	128352	117878	144969	190242	186790
	kg	7144	20079	35319	27350	32348	62733	77137	84882
C.c.crocodilus	T No	2700	12880	106073	52295	57609	3200	-	-
	kg	315	1633	11664	6291	8223	470	-	-
C.c.crocodilus	W No	-	-	-	2000	4750	18500	4000	5000
	kg	-	-	-	878	350	11449	2095	275
C.c.yacare	W No	-	11887	7200	500	28281	59606	57500	31160
	kg	-	8915	576	40	2281	4769	4600	2493
C. crocodilus Total	No	73433	119513	293630	183147	208518	226275	251742	222950
	kg	7459	30627	47558	34559	43202	79421	83832	87650
M. niger	T No	152	-	-	-	-	-	-	-
	kg	20	-	-	-	-	-	-	-
M. niger	D No	-	516	-	-	-	-	-	-
	kg	-	806	-	-	-	-	-	-
M. niger Total	No	152	516	-	-	-	-	-	-
	kg	20	806	-	-	-	-	-	-
C. cataphractus	T No	1350	800	2967	1031	-	-	-	-
	kg	203	120	445	155	-	-	-	-
C. niloticus	T No	250	901	1252	1665	-	-	-	-
	kg	20	99	142	255	-	-	-	-
C. niloticus	W No	-	52	-	-	313	-	-	110
	kg	-	170	-	-	503	-	-	128
C. niloticus Total	No	250	953	1252	1665	313	-	-	110
	kg	20	269	142	255	503	-	-	128

Japan Imports

Appendix 3, Contd.

Country/ Species		1977	1978	1979	1980	1981	1982	1983	1984
C.n.novaeguineae T	No	-	50	613	-	-	18	-	-
	kg	-	16	65	-	-	8	-	-
C.n.novaeguineae W	No	5766	10019	11865	11279	9600	8701	9195	12562
	kg	4721	10339	15463	11907	13428	9305	15165	23214
C.novaeguineae Total	No	5766	10069	12478	11279	9600	8719	9195	12562
	kg	4721	10355	15529	11907	13428	9313	15165	23214
C. porosus T	No	-	50	-	-	-	100	-	-
	kg	-	23	-	-	-	24	-	-
C. porosus W	No	1473	4390	5828	4775	3659	2553	3209	6050
	kg	1291	3925	5946	4172	47632	2262	4325	9755
C. porosus Total	No	1473	4440	5828	4775	3659	2653	3209	6050
	kg	1291	3948	5946	4172	47632	2286	4325	9755
C. siamensis W	No	-	600	604	700	200	200	-	800
	kg	-	4576	3690	4008	1173	1265	-	5642
Grand Total	No	82424	136891	316759	202597	225080	243295	270654	247088
	kg	13714	50701	73310	55056	72251	112191	127709	144883

Appendix 4. Dealers' data: Weight and number of skins, compiled by countries of origin.

W - Wet-salted D - Dry-salted T - Tanned

Country/ Species		1977	1978	1979	1980	1981	1982	1983	1984
Argentina									
C.c.crocodilus	T No	-	-	3333	-	-	-	-	-
	kg	-	-	168	-	-	-	-	-
Bolivia									
C.c.crocodilus	T No	1200	6180	27240	12858	14889	2000	-	-
	kg	95	611	1801	1065	1530	260	-	-
Colombia									
C.c.crocodilus	W No	-	-	-	-	4750	-	-	5000
	kg	-	-	-	-	350	-	-	275
C.c.crocodilus	D No	69733	61981	72456	82705	51000	28000	55000	26010
	kg	5444	6435	6916	7700	3280	2690	4750	2105
France									
C.cataphractus	T No	1350	800	2967	1031	-	-	-	-
	kg	203	120	445	155	-	-	-	-
C. niloticus	T No	250	901	959	1165	-	-	-	-
	kg	20	99	104	194	-	-	-	-
C. porosus	T No	-	50	-	-	-	-	-	-
	kg	-	23	-	-	-	-	-	-
C.n.novaeguineae	T No	-	-	-	-	-	18	-	-
	kg	-	-	-	-	-	8	-	-
France Total	T No	1600	1751	3926	2196	-	18	-	-
	kg	223	242	549	349	-	8	-	-
Indonesia									
C.n.novaeguineae	W No	518	669	684	434	1581	435	-	-
	kg	388	501	506	321	1170	322	-	-
C. porosus	W No	78	1121	1793	359	839	207	310	509
	kg	59	841	1345	269	629	155	232	381
via Singapore									
C.n.novaeguineae	W No	-	-	292	79	99	310	832	2856
	kg	-	-	70	35	140	536	2781	9940
C. porosus	W No	-	-	27	829	231	-	-	893
	kg	-	-	198	105	739	-	-	3206
Indonesia Total	W No	596	1790	2796	1701	2750	952	1142	4258
	kg	447	1342	2119	730	2678	1013	3013	13527
Italy									
C. niloticus	T No	-	-	293	500	-	-	-	-
	kg	-	-	38	61	-	-	-	-

Appendix 4, Contd.

Country/ Species			1977	1978	1979	1980	1981	1982	1983	1984
Malaysia										
C. porosus	W	No	-	-	-	-	-	100	-	200
		kg	-	-	-	-	-	250	-	150
via Singapore										
C. porosus	W	No	-	-	50	100	71	-	-	-
		kg	-	-	250	400	88	-	-	-
Malaysia Total	W	No	-	-	50	100	71	100	-	200
		kg	-	-	250	400	88	250	-	150
Netherlands Antilles										
C.c. crocodilus	D	No	-	9128	84551	18125	-	-	-	-
		kg	-	450	15235	1080	-	-	-	-
Palau										
C. porosus	W	No	-	58	96	-	-	-	-	-
		kg	-	191	n.d.	-	-	-	-	-
Panama, via F.R. Germany										
C.c. crocodilus	T	No	-	-	-	1645	-	-	-	-
		kg	-	-	-	230	-	-	-	-
Papua New Guinea										
C.n.novaeguineae	W	No	5108	9285	9504	10348	6667	7635	8237	9579
		kg	3646	9520	10556	10412	8874	7945	12005	12882
C. porosus	W	No	1278	3094	3328	3217	2215	2062	2127	3436
		kg	968	2629	2770	2708	2497	1145	2246	3525
via France										
C.n.novaeguineae	T	No	-	-	613	-	-	-	-	-
		kg	-	-	65	-	-	-	-	-
via Hong Kong										
C.n.novaeguineae	T	No	-	50	-	-	-	-	-	-
		kg	-	16	-	-	-	-	-	-
via Singapore										
C.n.novaeguineae	W	No	-	-	1120	380	1253	321	126	127
		kg	-	-	2756	988	3244	802	379	392
C. porosus	W	No	-	-	275	-	266	-	136	-
		kg	-	-	773	-	738	-	688	-
PNG Total	W	No	6386	12379	14227	13945	10401	10018	10626	13142
		kg	4614	12149	16855	14108	15353	9892	15318	16799
PNG Total	T	No	-	50	613	-	-	-	-	-
		kg	-	16	65	-	-	-	-	-

Appendix 4, Contd.

Country/ Species			1977	1978	1979	1980	1981	1982	1983	1984
Paraguay										
C.c. crocodilus	W No	-	-	-	-	2000	-	18500	4000	-
	kg	-	-	-	-	878	-	11449	2095	-
C.c. crocodilus	D No	1000	13058	23350	27522	66878	116969	108242	160780	
	kg	1700	10949	13168	18570	29068	60043	56952	82777	
C.c. crocodilus	T No	1500	6700	75000	37792	42720	1200	-	-	
	kg	220	1022	9628	4996	6693	210	-	-	
C.c. yacare	W No	-	11887	7200	500	28281	59606	57500	31160	
	kg	-	8915	576	40	2281	4769	4600	2493	
via Argentina										
C.c. crocodilus	D No	-	-	-	-	-	-	24000	-	
	kg	-	-	-	-	-	-	13850	-	
via Hong Kong										
M. niger	T No	152	-	-	-	-	-	-	-	
	kg	20	-	-	-	-	-	-	-	
via Uruguay										
C.c. crocodilus	D No	-	-	-	-	-	-	3000	-	
	kg	-	-	-	-	-	-	1585	-	
Paraguay Total	W No	-	11887	7200	2500	28281	78106	61500	31160	
	kg	-	8915	576	918	2281	16218	6695	2493	
Paraguay Total	D No	1000	13058	23350	27522	66878	116969	135242	160780	
	kg	1700	10949	13168	18570	29068	60043	72387	82777	
Paraguay Total	T No	1652	6700	175000	37792	42720	1200	-	-	
	kg	240	1022	9628	4996	6693	210	-	-	
Peru										
C.c. crocodilus	D No	-	10000	-	-	-	-	-	-	
	kg	-	1445	-	-	-	-	-	-	
Philippines										
C.n.novaeguineae	W No	-	-	65	38	-	-	-	-	
	kg	-	-	250	151	-	-	-	-	
Singapore										
C.n.novaeguineae	W No	140	65	-	-	-	-	-	-	
	kg	687	318	-	-	-	-	-	-	
C. porosus	W No	117	117	259	70	-	-	50	220	
	kg	264	264	610	190	-	-	122	445	
C. porosus	T No	-	-	-	-	-	100	-	-	
	kg	-	-	-	-	-	24	-	-	
via Indonesia										
C. porosus	W No	-	-	-	200	-	-	-	640	
	kg	-	-	-	500	-	-	-	1800	
Singapore Total	W No	257	182	259	270	-	100	50	860	
	kg	951	582	610	690	-	24	122	2245	

Japan Imports

Appendix 4, Contd.

Country/ Species			1977	1978	1979	1980	1981	1982	1983	1984
Solomon Islands										
C. porosus	W	No	-	-	-	-	37	184	586	152
		kg	-	-	-	-	72	712	1037	248
South Africa										
C. niloticus	W	No	-	52	-	-	-	-	-	-
		kg	-	170	-	-	-	-	-	-
Spain										
C.c. crocodilus	T	No	-	-	500	-	-	-	-	-
		kg	-	-	67	-	-	-	-	-
Suriname, via France										
M. niger	D	No	-	516	-	-	-	-	-	-
		kg	-	806	-	-	-	-	-	-
Thailand										
C.n.novaeguineae	W	No	-	-	200	-	-	-	-	-
		kg	-	-	1325	-	-	-	-	-
C. siamensis	W	No	-	600	604	700	200	200	-	800
		kg	-	4576	3690	4008	1173	1265	-	5642
Total	W	No	-	600	804	700	200	200	-	800
		kg	-	4576	5015	4008	1173	1265	-	5642
USA										
A.mississip.	W	No	-	-	-	-	2790	5448	6508	4310
		kg	-	-	-	-	9182	19606	24387	17657
via France										
A.mississip.	W	No	-	-	-	-	-	-	-	60
		kg	-	-	-	-	-	-	-	670
A.mississip.	T	No	-	-	-	-	-	-	-	246
		kg	-	-	-	-	-	-	-	167
USA Total	W	No	-	-	-	-	2790	5448	6508	4370
		kg	-	-	-	-	9182	19606	24387	18327
USA Total	T	No	-	-	-	-	-	-	-	246
		kg	-	-	-	-	-	-	-	167
Venezuela										
C.c. crocodilus	D	No	-	579	-	-	-	-	-	-
		kg	-	800	-	-	-	-	-	-
Zimbabwe										
C. niloticus	W	No	-	-	-	-	313	-	-	110
		kg	-	-	-	-	503	-	-	128
Grand Total	No		82424	136891	316759	202597	225080	243295	270654	247088
	kg		13714	50701	73310	55056	72251	112191	127709	144883

Appendix 5. Dealers' data: Size of skins by length (cm)

* probably width declared by mistake

Species/Country		1977	1978	1979	1980	1981	1982	1983	1984
<u>C.c. crocodilus</u>									
Argentina	max	-		270	-	-	-	-	-
	av	-	-	150	-	-	-	-	-
	min	-	-	100	-	-	-	-	-
Bolivia	max	230	230	230	230	230	230	-	-
	av	160	156.5	151.4	152.4	152.4	160	-	-
	min	100	100	100	100	100	100	-	-
Colombia	max	114.3	114.3	127	127	109.2	81.3	81.3	96.5
	av	61.2	52.8	56.9	52.3	49.8	60.2	57.9	52.1
	min	40.6	40.6	40.6	40.6	40.6	40.6	40.6	40.6
Neth. Antilles	max	-	73.7	99.1	81.3	-	-	-	-
	av	-	53.3	63.5	50.8	-	-	-	-
	min	-	45.7	45.7	45.7	-	-	-	-
Panama via FRG	max	-	-	-	270	-	-	-	-
	av	-	-	-	150	-	-	-	-
	min	-	-	-	115	-	-	-	-
Paraguay (R+T)	max	270	270	270	270	270	270	270	270
	av	162	100.8	137.5	168.6	166.4	164	171.1	168.4
	min	100	65	90	100	55	70	100	80
Paraguay via Argentina	max	-	-	-	-	-	-	270	-
	av	-	-	-	-	-	-	180	-
	min	-	-	-	-	-	-	115	-
Paraguay via Uruguay	max	-	-	-	-	-	-	270	-
	av	-	-	-	-	-	-	150	-
	min	-	-	-	-	-	-	120	-
Peru	max	-	99.1	-	-	-	-	-	-
	av	-	66.0	-	-	-	-	-	-
	min	-	53.3	-	-	-	-	-	-
Venezuela	max	-	270	-	-	-	-	-	-
	av	-	-	-	-	-	-	-	-
	min	-	180	-	-	-	-	-	-
<u>C.c. yacare</u>									
Paraguay	max	-	270	270	270	270	270	270	270
	av	-	205.8	162.2	165.4	168.9	198.4	199.8	188.0
	min	-	115	135	135	150	150	150	115

Japan Imports

Appendix 5, Contd.

Species/Country		1977	1978	1979	1980	1981	1982	1983	1984
<u>C.n. novaeguineae</u>									
Philippines	max	-	-	274.3	274.3	-	-	-	-
	av	-	-	182.9	182.9	-	-	-	-
	min	-	-	121.9	121.9	-	-	-	-
Singapore	max	45.7*	45.7*	-	-	-	-	-	-
	av	-	-	-	-	-	-	-	-
	min	25.4*	25.4*	-	-	-	-	-	-
<u>C. porosus</u>									
Singapore	max	45.7*	45.7*	45.7*	-	-	-	-	-
	av	-	-	-	-	-	-	-	-
	min	25.4*	25.4*	25.4*	-	-	-	-	-
<u>A. mississippiensis</u>									
USA	max	-	-	-	-	365.8	396.2	396.2	396.2
	av	-	-	-	-	201.2	201.2	204.2	207.2
	min	-	-	-	-	121.9	121.9	121.9	121.9
USA via France	max	-	-	-	-	-	-	-	274.3
	av	-	-	-	-	-	-	-	253.0
	min	-	-	-	-	-	-	-	243.8
<u>M. niger</u>									
Suriname via France	max	-	182.9	-	-	-	-	-	-
	av	-	152.4	-	-	-	-	-	-
	min	-	121.9	-	-	-	-	-	-

Appendix 6. Dealers' data: Size of skins by width (cm)

T - tanned skin R - raw skin

Species/Country		1977	1978	1979	1980	1981	1982	1983	1984
<u>C.c. crocodilus</u>									
Neth Antilles	max	-	73.7	99.1	81.3	-	-	-	-
	av	-	53.3	63.5	50.8	-	-	-	-
	min	-	45.7	45.7	45.7	-	-	-	-
Spain	max	-	-	34 T	-	-	-	-	-
	av	-	-	30 T	-	-	-	-	-
	min	-	-	25 T	-	-	-	-	-
<u>C.c. yacare</u>									
Paraguay	max	-	200	125	125	125	149	149	125
	av	-	112.1	98.3	99.3	87.8	100.3	102.8	96.8
	min	-	50	65	65	50	75	75	65
<u>C.n. novaeguineae</u>									
France	max	-	-	-	-	-	50 T	-	-
	av	-	-	-	-	-	37 T	-	-
	min	-	-	-	-	-	30 T	-	-
Indonesia	max	45.7	50.8	38.1	83.8	58.4	63.5	-	-
	av	33.5	32.3	26.9	39.6	36.6	38.1	-	-
	min	10.2	15.2	17.8	25.4	22.9	25.4	-	-
Indonesia via Singapore	max	-	-	22.9	45.7	55.9	66	26.2	88.9
	av	-	-	17.8	33.0	38.1	41.9	44.5	41.9
	min	-	-	15.2	25.4	25.4	25.4	25.4	15.2
PNG	max	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8
	av	20.3	22.9	22.9	22.4	25.4	26.4	28.2	27.7
	min	10.2	10.2	10.2	10.2	10.2	17.8	17.8	17.8
PNG via France	max	-	-	73.3 T	-	-	-	-	-
	av	-	-	61 T	-	-	-	-	-
	min	-	-	38.1 T	-	-	-	-	-
PNG via Hong Kong	max	-	45.7 T	-	-	-	-	-	-
	av	-	38.1 T	-	-	-	-	-	-
	min	-	-30.5 T	-	-	-	-	-	-
PNG via Singapore	max	-	-	88.9	-	58.4	61	71.1	76.2
	av	-	-	30.5	-	25.4	25.4	22.9	40.6
	min	-	-	15.2	-	15.2	15.2	15.2	25.4
Thailand	max	-	-	63.5	-	-	-	-	-
	av	-	-	50.8	-	-	-	-	-
	min	-	-	43.2	-	-	-	-	-

Appendix 6, Contd.

Species/Country		1977	1978	1979	1980	1981	1982	1983	1984
<u>C. porosus</u>									
France	max	-	40 T	-	-	-	-	-	-
	av	-	30 T	-	-	-	-	-	-
	min	-	25 T	-	-	-	-	-	-
Indonesia	max	86.4	81.3	114.3	58.4	50.8	96.5	114.3	119.4
	av	46.4	41.5	44.4	44.2	33	40.6	47.4	48.8
	min	30.5	22.9	25.4	25.4	22.9	17.8	22.9	30.5
Indonesia via Singapore	max	-	-	101.6	22.9	66	-	-	86.4
	av	-	-	63.5	17.8	54.4	-	-	41.7
	min	-	-	50.8	15.2	25.4	-	-	25.4
Malaysia	max	-	-	-	-	-	101.6	-	73.7
	av	-	-	-	-	-	57.2	-	63.5
	min	-	-	-	-	-	50.8	-	53.3
Malaysia via Singapore	max	-	-	58.4	58.4	48.3	-	-	-
	av	-	-	50.8	53.3	35.6	-	-	-
	min	-	-	43	48.3	25.4	-	-	-
Palau	max	-	61	-	-	-	-	-	-
	av	-	38.1	40.6	-	-	-	-	-
	min	-	10.2	-	-	-	-	-	-
PNG	max	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8
	av	17.8	20.3	20.3	20.6	25.4	23.9	27.9	27.4
	min	10.2	10.2	10.2	10.2	10.2	10.2	17.8	17.8
PNG via Singapore	max	-	-	88.9	-	58.4	-	63.5	-
	av	-	-	27.9	-	25.4	-	35.6	-
	min	-	-	15.2	-	15.2	-	15.2	-
Singapore	max	-	-	-	50.8	-	40 T	58.4	58.4
	av	-	-	-	35.6	-	27 T	45.7	43.2
	min	-	-	-	25.4	-	20 T	40	15.2
Singapore via Indonesia	max	-	-	-	63.5	-	-	-	96.5
	av	-	-	-	45.7	-	-	-	35.6
	min	-	-	-	27.9	-	-	-	15.2
Solomon Is.	max	-	-	-	-	76.2	81.3	94	109.2
	av	-	-	-	-	25.4	35.6	25.4	25.4
	min	-	-	-	-	15.2	12.7	12.7	12.7
<u>A. mississippiensis</u>									
USA via France	max	-	-	-	-	-	-	-	76
	av	-	-	-	-	-	-	-	48
	min	-	-	-	-	-	-	-	40

Appendix 6, Contd.

Species/Country		1977	1978	1979	1980	1981	1982	1983	1984
<u>C. siamensis</u>									
Thailand	max	-	63.5	63.5	63.5	63.5	63.5	-	66
	av	-	50.8	50.8	50.8	50.8	50.8	-	53.3
	min	-	45.7	45.7	45.7	45.7	45.7	-	48.3
<u>C. niloticus</u>									
France	max	39 T	29 T	30 T	30 T	-	-	-	-
	av	21 T	24.3 T	23 T	24 T	-	-	-	-
	min	12 T	15 T	15 T	15 T	-	-	-	-
Italy	max	-	-	24 T	24 T	-	-	-	-
	av	-	-	20 T	20 T	-	-	-	-
	min	-	-	15 Y	15 T	-	-	-	-
South Africa	max	-	40	-	-	-	-	-	-
	av	-	34	-	-	-	-	-	-
	min	-	30	-	-	-	-	-	-
Zimbabwe	max	-	-	-	-	48	-	-	48
	av	-	-	-	-	41.6	-	-	40.7
	min	-	-	-	-	30	-	-	25
<u>C. cataphractus</u>									
France	max	35 T	35 T	24 T	35 T	-	-	-	-
	av	22.3 T	23.5 T	19.5 T	21.4 T	-	-	-	-
	min	12 T	21 T	15 T	15 T	-	-	-	-
<u>M. niger</u>									
Paraguay via Hong Kong	max	39 T	-	-	-	-	-	-	-
	av	31 T	-	-	-	-	-	-	-
	min	25 T	-	-	-	-	-	-	-

Appendix 7. Dealers' data: Average weight of skins by species and countries (g)

W - wet salted D - dry salted T - tanned

Species/Country		1977	1978	1979	1980	1981	1982	1983	1984
<u>C.c. crocodilus</u>									
Argentina	T	-	-	50	-	-	-	-	-
Bolivia	T	79	99	66	83	103	130	-	-
Colombia	W	-	-	-	-	74	-	-	55
	D	78	104	96	93	64	96	86	81
Neth Antilles	D	-	49	180	60	-	-	-	-
Panama/ FR Germany	T	-	-	-	140	-	-	-	-
Paraguay	W	-	-	-	439	-	619	524	-
	D	1700	838	564	675	435	513	526	515
	T	147	152	128	132	157	175	-	-
Paraguay/ Argentina	D	-	-	-	-	-	-	577	-
Paraguay/ Uruguay	D	-	-	-	-	-	-	528	-
Peru	D	-	144	-	-	-	-	-	-
<u>C. c. yacare</u>									
Paraguay	W	-	750	80 ?	80 ?	80 ?	81 ?	80 ?	80 ?
<u>C. n. novaeguineae</u>									
France	T	-	-	-	-	-	444	-	-
Indonesia	W	750	750	740	740	740	740	-	-
Indonesia/ Singapore	W	-	-	240	443	1414	1729	3342	3480
PNG	W	714	1025	1111	1006	1331	1041	1457	1335
PNG/ H Kong	T	-	320	-	-	-	-	-	-
PNG/ Singapore	W	-	-	2461	2600	2589	2498	3008	3087
PNG/ France	T	-	-	106	-	-	-	-	-
Philippines	W	-	-	3846	3974	-	-	-	-
Singapore	W	4907	4892	-	-	-	-	-	-
Thailand	W	-	-	6625	-	-	-	-	-
<u>C. porosus</u>									
France	T	-	460	-	-	-	-	-	-
Indonesia	W	750	749	750	750	750	750	750	750
Indonesia/ Singapore	W	-	-	7333	127	3199	-	-	3590
Malaysia	W	-	-	-	-	-	2500	-	750
Malaysia/ Singapore	W	-	-	5000	4000	1239	-	-	-
Palau	W	-	3293	-	-	-	-	-	-
PNG	W	757	850	832	842	1127	556	1056	1026
PNG/ Singapore	W	-	-	2811	-	2774	-	5059	-
Singapore	W	2256	2256	2355	2714	-	-	2440	2023
Singapore/ Indonesia	W	-	-	-	2500	-	-	-	2813
Solomon Is.	W	-	-	-	-	1946	3870	1770	1632
<u>A. mississippiensis</u>									
USA	W	-	-	-	-	3291	3599	3747	4097
USA/ France	W	-	-	-	-	-	-	-	11167
	T	-	-	-	-	-	-	-	679

Appendix 7, Contd.

Species/Country		1977	1978	1979	1980	1981	1982	1983	1984
<u>C. siamensis</u>									
Thailand	W	-	7627	6109	5726	5865	6325	-	7053
France	T	80	110	108	166	-	-	-	-
Italy	T	-	-	130	122	-	-	-	-
South Africa	W	-	3269	-	-	-	-	-	-
Zimbabwe	W	-	-	-	-	1607	-	-	1164
<u>C. cataphractus</u>									
France	T	150	150	150	150	-	-	-	-
<u>M. niger</u>									
Paraguay/ H Kong	T	132	-	-	-	-	-	-	-
Suriname/ France	D	-	1562	-	-	-	-	-	-

Appendix 8: CITES Annual Report Data 1977-1984

IMPORT TO JAPAN

INDEX OF I.S.O. COUNTRY CODES USED

AR ARGENTINA	MY MALAYSIA
AT AUSTRIA	NG NIGERIA
BO BOLIVIA	NL NETHERLANDS
CA CANADA	PA PANAMA
CG CONGO	PG PAPUA NEW GUINEA
CH SWITZERLAND	PY PARAGUAY
CO COLOMBIA	SG SINGAPORE
DD GERMAN DEMOCRATIC REPUBLIC	SV EL SALVADOR
DE GERMANY, FEDERAL REPUBLIC OF	TH THAILAND
ES SPAIN	TW TAIWAN, PROVINCE OF
FR FRANCE	US UNITED STATES
GB UNITED KINGDOM	VE VENEZUELA
GY GUYANA	XX COUNTRY UNKNOWN
HK HONG-KONG	ZA SOUTH AFRICA
ID INDONESIA	ZM ZAMBIA
IT ITALY	ZW ZIMBABWE
MX MEXICO	

Appendix 8 (cont.)

1977 JP/77/I.1

IMPORT TO JAPAN

SPECIES	COUNTRY OF EXPORT	IMPORTS - REPORTED (PURPOSE)	EXPORTS/RE-EXPORTS REPORTED (PURPOSE)
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APPENDIX II

Crocodylus novaeguineae	PG		7041 skins
novaeguineae	PG		1296 skins
Crocodylus porosus			

Appendix 8 (cont.)

JP/78/I.1

1978

IMPORT TO JAPAN

SPECIES	COUNTRY OF EXPORT	COUNTRY OF ORIGIN	IMPORTS REPORTED (PURPOSE)	EXPORTS/RE-EXPORTS REPORTED (PURPOSE)
APPENDIX I				
Alligator mississippiensis	US			323 skins
APPENDIX II				
Caiman crocodilus crocodilus	DE	[IT]		521 skins
	GB	[XX]		660 skins
Crocodylus novaeguineae	HK	[PY]		2000 sq.ft skins
Crocodylus novaeguineae	HK	[PG]		50 skins
novaeeguineae	PG			6292 skins (C)
Crocodylus porosus	PG			1459 skins (C)

Appendix 8 (cont.)

JP/79/I.1

1979

IMPORT TO JAPAN

SPECIES	COUNTRY OF		IMPORTS REPORTED (PURPOSE)	EXPORTS/RE-EXPORTS REPORTED (PURPOSE)
	EXPORT	ORIGIN		
Calman crocodilus yacare Crocodylus novaeguineae novaeguineae	CA			1 skin
	PG			13076 skins (C)
	PG			1 skin (P)
	PG			1 skin (S)
Crocodylus porosus	PG			1809 skins (C)
	PG			1 skin (S)

APPENDIX II

Appendix 8 (cont.).

Japan Imports

JP/80/I.1

1980

IMPORT TO JAPAN

EXPORTS/RE-EXPORTS
REPORTED (PURPOSE)IMPORTS
REPORTED (PURPOSE)COUNTRY OF
EXPORT ORIGIN

SPECIES

APPENDIX I

Crocodylidae spp.	FR	[ZM]		129 skins
Crocodylus cataphractus	IT	[CG]		50 skins
Crocodylus niloticus	GB	[XX]		395 skins
Crocodylus porosus	FR	[SG]		73 skins

APPENDIX II

CROCODYLIA spp.

Caiman crocodilus crocodilus

SG	[XX]	120 skins	
SG	[XX]	2870 inches skins	
BO	[XX]	12258 skins	
CH	[XX]	10 skins	
FR	[XX]	265 skins	
GB	[XX]	55 skins	
IT	[CO]		
IT	[XX]	1043 skins	
SG	[XX]	10500 skins	
US	[PY]		
DE	[CO]		
DE	[XX]	2 skins	
IT	[XX]	48 skins	
PA	[CO]		
IT	[PY]		
IT	[XX]	721 skins	
ID			
IT	[XX]	152 skins	
CH	[XX]	384 skins	
DE	[XX]	10 skins	

Caiman crocodilus fuscus

2000 skins (C)
16 skins

Caiman crocodilus yacare

9400 skins (C)
36 skins

Crocodylidae spp.

Crocodylus acutus

14 skins

Crocodylus novaeguineae
novaeguineae

2 skins

Appendix 8 (cont.)

1980

IMPORT TO JAPAN

JP/80/I.2

SPECIES	COUNTRY OF		IMPORTS		EXPORTS/RE-EXPORTS REPORTED (PURPOSE)
	EXPORT	ORIGIN	REPORTED	(PURPOSE)	
Crocodylus novaeguineae novaeguineae	FR	[XX]	253 skins		102 skins
	GB	[XX]			
	IT	[XX]	218 skins		
	PG	[XX]	2922 skins		
	SG	[XX]	1209 skins		
	SG	[XX]	1837 inches skins		

APPENDIX II

Crocodylus novaeguineae
novaeguineae

Appendix 8 (cont.)

Japan Imports

1981

IMPORT TO JAPAN

JP/81/I.1

SPECIES	COUNTRY OF		IMPORTS REPORTED (PURPOSE)	EXPORTS/RE-EXPORTS REPORTED (PURPOSE)
	EXPORT	ORIGIN		
APPENDIX I				
<i>Crocodylus niloticus</i>	IT	[NG]		39 skins
	ZA	[ZW]	25 skins (C)	25 skins (C)
	ZW	[XX]	289 skins (C)	
	TH	[XX]	300 skins (C)	
<i>Crocodylus siamensis</i>				
APPENDIX II				
<i>Alligatoridae</i> spp.	BO		45131 skins (C)	
	CO		1585 skins (C)	
	CO		52 kg skins (C)	
	DD		28 skins (C)	
	DE		343 skins (C)	
	HK		839 skins (C)	
	NL		17485 skins (C)	
	PY		36628 kg skins (C)	
	US		629 skins (C)	
	FR	[US]		8 skins
	US			1925 skins (C)
	US			51 skins (P)
	<i>Calman crocodilus crocodilus</i>	DE	[XX]	
<i>Crocodylidae</i> spp.	HK	[GY]		12 skins (C)
	DE		5 skins (C)	
	DE	[PG]	1 skin (C)	
	FR		5 skins (C)	
	MY		50 skins (C)	
	PG		1764 skins (C)	
	SG		3727 skins (C)	
SG		18318 inches skins (C)		

IMPORT TO JAPAN

JP/81/I.2

SPECIES	COUNTRY OF EXPORT ORIGIN	IMPORTS REPORTED (PURPOSE)	EXPORTS/RE-EXPORTS REPORTED (PURPOSE)
Crocodylidae spp.	TH	52 skins (C)	
Crocodylus novaeguineae	DE	[PG]	1 skin (C)
novaeguineae	FR	[PG]	1 skin
	FR	[SG]	191 skins
	FR	[TH]	300 skins

II. APPENDIX

Crocodylidae spp.
Crocodylus novaeguineae
novaeguinae

Appendix 8 (cont.)

Japan Imports

JP/82/I.1

1982

IMPORT TO JAPAN

SPECIES	COUNTRY OF		IMPORTS		EXPORTS/RE-EXPORTS REPORTED (PURPOSE)
	EXPORT	ORIGIN	REPORTED (PURPOSE)		
APPENDIX I					
Crocodylus porosus	FR	[XX]	200 skins (C)	109 skins (C)	
Crocodylus siamensis	TH				
APPENDIX II					
Alligatoridae spp.	AT		936 skins (C)		
	AT		322 ft skins (C)		
	DE		62 skins (C)		
	HK		430 skins (C)		
	HK		3 kg skins (C)		
	HK	[BO]	112 skins (C)		
	HK	[BO]	76 kg skins (C)		
	HK	[CO]	963 skins (C)		
	IT		891 skins (C)		
	PY		93600 skins (C)		
	PY		98141 kg skins (C)		
	SG	[CO]	8400 skins (C)		
	US		303 skins (C)		
Alligator mississippiensis	US				5355 skins (C)
	US				4582 ft skins (C)
	DE	[BO]			149 skins (C)
Caiman crocodilus crocodilus	FR	[PY]			1364 sides (C)
	HK	[BO]			76 kg sides (C)
	HK	[BO]			112 lbs skins (C)
	HK	[CO]			947 skins (C)
	HK	[PY]			195 sq.ft skins (C)
	IT	[PA]			806 skins
	IT	[AR]			533 skins
Caiman crocodilus fuscus					
Caiman crocodilus yacare					

Appendix 8 (cont.)

JP/82/I.2

1982

IMPORT TO JAPAN

SPECIES	COUNTRY OF		IMPORT'S	EXPORTS/RE-EXPORTS
	EXPORT	ORIGIN	REPORTED (PURPOSE)	REPORTED (PURPOSE)
APPENDIX II				
Caiman crocodilus yacare Crocodylidae spp.	IT	[PY]		1338 skins
	AT	[DE]		
	CO		168 skins (C)	
	ES		5805 skins (C)	
	FR		100 skins (C)	
	GU		1306 skins (C)	
	IT		330 skins (C)	
	PG		35 skins (C)	
	SG		8072 skins (C)	
	SG		780 skins (C)	
	SG	[ID]	1148 skins (C)	
	SG	[ID]	1 case skin (C)	
	SG	[ID]	9296 kg skins (C)	
	SG	[PG]	1235 skins (C)	
	SG	[PG]	1899 kg skins (C)	
	SG	[TH]	18 skins (C)	
	TH		200 skins (C)	
	TW		88 skins (C)	
	Crocodylus novaeguineae novaeguineae	FR	[ID]	
FR		[XX]		986 skins (C)

Appendix 8 cont.)

1983

IMPORT TO JAPAN

JP/83/I.1

SPECIES	COUNTRY OF EXPORT	ORIGIN	IMPORTS REPORTED (PURPOSE)	EXPORTS/RE-EXPORTS REPORTED (PURPOSE)
APPENDIX I				
<i>Crocodylus niloticus</i>	FR	[ZW]		10 skins (C)
<i>Crocodylus porosus</i>	DE	[XX]		10 skins (C)
	FR	[XX]		358 skins (C)
APPENDIX II				
<i>Alligator mississippiensis</i>	FR	[MX]	744 skins (C)	
	FR	[US]	212 skins (C)	3313 skins (C)
	HK	[BO]	50 kg skins (C)	
	PY		2000 skins (C)	
	SG	[XX]	490 skins (C)	
	US		2952 skins (C)	4660 skins (C)
	AT	[GB]	5151 skins (C)	
	AT	[PY]	2030 skins (C)	
	AT	[XX]	760 skins (C)	
	BO		10376 skins (C)	
	BO		129 kg skins (C)	
	CO	[PA]	4750 kg skins (C)	
	CO	[XX]	3195 kg skins (C)	
	FR	[CO]		2881 sides (C)
	FR	[PY]		117 sides (C)
	IT	[BO]		2123 skins (C)
	IT	[CO]		10 skins (C)
	PY		17400 skins (C)	
	PY		123444 kg skins (C)	
	SG	[CO]	5855 skins (C)	
	DE	[XX]		14 skins (C)
	FR	[PY]	12 skins (C)	
<i>Caiman crocodilus fuscus</i>				

Caiman crocodilus crocodilus

Appendix 8 (cont.)

1983

IMPORT TO JAPAN

JP/83/I.2

SPECIES	COUNTRY OF EXPORT	ORIGIN	IMPORTS REPORTED (PURPOSE)	EXPORTS/RE-EXPORTS REPORTED (PURPOSE)
APPENDIX II				
Galman crocodilus fuscus	IT	[PA]		24 skins (C)
Galman crocodilus yacare	CH	[XX]		396 sides
	IT	[AR]		521 skins (C)
	PY		40500 skins (C)	
	PG		7500 inches skins (C)	
	PG		2446 kg skins (C)	
Crocodylus spp.				
Crocodylus novaeguineae	DE	[XX]		5 skins (C)
	FR	[PG]		30 skins (C)
	IT	[PG]		25 skins (C)
	PG		4039 skins (C)	10160 skins (C)
	PG		80566 inches skins (C)	
	PG		1529 kg skins (C)	
	SG	[ID]	5810 skins (C)	
Crocodylus porosus	PG			1682 skins (C)

Appendix 8 (cont.)

JP/84/I.1

1984

IMPORT TO JAPAN

SPECIES	COUNTRY OF		IMPORTS REPORTED (PURPOSE)	EXPORTS/RE-EXPORTS REPORTED (PURPOSE)
	EXPORT	ORIGIN		
APPENDIX I				
<i>Crocodylus porosus</i> <i>Crocodylus siamensis</i>	FR	[SG]		74 skins
	TH		800 skins (C)	
	TH		1445 kg skins (C)	
APPENDIX II				
<i>Alligator mississippiensis</i>	FR	[US]	1303 skins (C)	1035 skins
	US		1856 skins (C)	6542 skins (C)
	US			75 kg skins (C)
<i>Caiman crocodilus crocodilus</i>	CH	[XX]		1086 skins
	CO	[PA]	2085 kg skins (C)	
	CO	[XX]	2972 kg skins (C)	
	ES	[CO]	1550 kg skins (C)	
	PY		114374 kg skins (C)	
	SG	[CO]	9425 skins (C)	
	TW		6000 inches skins (C)	
	VE			1553 sides (C)
	FR	[SV]		12397 sides
	IT	[CO]		60 skins
<i>Caiman crocodilus fuscus</i>	IT	[PA]	60 skins (C)	
	IT	[PY]		88 skins
	PY		150 skins (C)	
<i>Caiman crocodilus yacare</i>	FR	[PY]		100 sides
	IT	[PY]	338 skins (C)	277 skins
	PY		2865 kg skins (C)	
<i>Crocodylus niloticus</i>	ZA	[ZW]		5 skins (C)
	ZW		110 skins (C)	10 skins

Appendix 8 (cont.)

1984	IMPORT TO JAPAN		JP/84/I.2	
SPECIES	COUNTRY OF EXPORT	IMPORT'S REPORTED (PURPOSE)	EXPORTS/RE-EXPORTS REPORTED (PURPOSE)	
APPENDIX II				
Crocodylus novaeguineae novaeguineae	DE	[PG]		20 skins (C)
	DE	[ZA]	54 skins (C)	
	FR	[PG]	30 skins (C)	100 skins
	FR	[SU]	363 skins (C)	100 skins
	IT	[PG]		4 skins
	PG		9736 skins (C)	9954 skins (C)
Crocodylus porosus	SG	[ID]	6559 skins (C)	
	SG	[ID]	313 kg skins (C)	
	FR	[PG]		30 skins
	PG		2065 skins (C)	2544 skins (C)

APPENDIX 9: SKIN SIZE CONVERSION FACTORS

The following formulae are presented for the conversion of skin lengths to belly width and vice versa. These formulae were suggested for each species by one dealer based on his long experience in the trade. A 10% margin should be included to allow for individual variations.

1) Alligator mississippiensis / Caiman crocodilus

Feet x 2.2 inches = belly width in inches

2) Crocodylus porosus

Feet x 2.4 inches = belly width in inches

3) Crocodylus novaeguineae

Feet x 2.5 inches = belly width in inches

4) Crocodylus niloticus

Feet x 2.3 inches = belly width in inches

Caiman crocodilus skins are often shipped in 'tinga frames' which are the skins with tail, stomach, ossified sides and head cut off so that a cut-out rectangle of skin is produced. For wild specimens, the following table is presented whereby the size of the animal producing the skin can be estimated. Farmed or ranched animals are likely to be slightly shorter relative to the frame.

Tinga Frame Length (cm)	Length of Animal
65	115
75	135
85	150
100	180
115	200
125	225
over	270 (maximum)

The following table presents a conversion rate for tanned Caiman skin size to total length of body.

Crust Size (ft2)	Body Length (cm)
0.20 - 0.45	100 - 150
0.50 - 0.85	150 - 200
0.90 - 1.25	180 - 225
1.30 +	200 - 270

The following table gives the number of skins required for a 1,000 ft² of a particular size of finished skin. This conversion rate is applicable to any species of crocodilian.

Quantity of Skins (piece/1000 ft ²)	Finished Size
1,250	0.20 - 0.45
700	0.50 - 0.85
500	0.90 - 1.25
300	1.30 +

Appendix 10: Japanese Imports of Crocodile and Alligator Leather
Source : Japanese Customs Statistics

Year Country	1977	1978	1979	1980	1981	1982	1983	1984	Total
North America									
US			1			272	311	62	646
North America Total									
			1			272	311	62	646
Latin America / Caribbean									
PY	6,687	6,682	13,972	7,349	9,989	2,034	521	2,550	49,784
BO	1,100	1,266	2,693	3,222	2,888	1,631	975	1,006	14,781
CO	2,301	1,543	290			145	6	186	4,471
PA	138	454	2,661	92					3,345
HN								2,021	2,021
AR		188	168						356
AN	245								245
BR		222							222
MX	59			50					109
Latin America / Caribbean Total									
	10,530	10,355	19,784	10,713	12,877	3,810	1,502	5,763	75,334
Asia / Oceania									
HK	109	694					49		852
SG	165	110	97	86	46	14	17	210	745
ID						105		311	416
PG						50			50
Asia / Oceania Total									
	274	804	97	86	46	169	66	521	2,063
Africa									
ZA	70								70
SD			60						60
Africa Total									
	70		60						130
Europe									
FR	1,001	926	520	420	256	179	869	752	4,923
IT	238	6	48	47		406	231	43	1,019
DE				230					230
GB	13	70		12					95
ES				66					66
Europe Total									
	1,252	1,002	568	775	256	585	1,100	795	6,333
Grand Total									
	12,126	12,161	20,510	11,574	13,179	4,836	2,979	7,141	84,506

